

36th International Cosmic Ray Conference (ICRC2019)

Madison, Wisconsin, USA
24 July - 1 August 2019

Volume 1 of 10

ISBN: 978-1-7138-0206-8

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2019) by the author(s) under the terms of the Creative Commons
Attribution-Non Commercial-No Derivatives 4.0 International License (CC BY-NC-ND 4.0).
<https://creativecommons.org/licenses/by-nc-nd/4.0/>
All rights reserved.

Printed with permission by Curran Associates, Inc. (2020)

For permission requests, please contact International Union of Pure and Applied Physics (IUPAP)
at the address below.

International Union of Pure and Applied Physics (IUPAP)
Nanyang Technological University
Nanyang Executive Centre #04-09
60 Nanyang View
Singapore 639673

Phone: +65 6792 7784

<https://iupap.org/>

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

HIGHLIGHT TALKS

THE CALORIMETRIC ELECTRON TELESCOPE (CALET) ON THE INTERNATIONAL SPACE STATION	1
<i>Y. Asaoka</i>	
MULTI-MESSENGER OBSERVATIONS OF GRBS: THE GW CONNECTION	17
<i>E. Bissaldi</i>	
HIGHLIGHTS FROM THE PIERRE AUGER OBSERVATORY	33
<i>A. Castellina</i>	
PROBING HIGH-ENERGY HADRONIC INTERACTIONS WITH EXTENSIVE AIR SHOWERS	51
<i>L. Cazon</i>	
RESULTS FROM THE MEDITERRANEAN NEUTRINO DETECTORS	67
<i>R. Coniglione</i>	
NON-GAMMA-RAY APPLICATIONS OF TEV TELESCOPES	85
<i>M. Daniel</i>	
MAJOR CHANGES IN UNDERSTANDING OF GRBS: DISCOVERY OF TERA-ELECTRON VOLT GAMMA-RAY EMISSION	101
<i>R. Mirzoyan</i>	
COSMOGENIC EVIDENCE FOR PAST SEP EVENTS	119
<i>F. Miyake</i>	
COMBINED DARK MATTER SEARCHES TOWARDS DWARF SPHEROIDAL GALAXIES WITH FERMI-LAT, HAWC, HESS, MAGIC AND VERITAS	123
<i>L. Oakes, C. Armand, E. Charles, M.D. Mauro, C. Giuri, J.P. Harding, T. Miener, E. Moulin, D. Kerszberg, V. Poireau, E. Pueschel, J. Rico, L. Rinchiuso, D. Salazar-Gallegos, K. Tollefson, B. Zitzer</i>	
HIGHLIGHTS FROM THE TELESCOPE ARRAY EXPERIMENT	132
<i>S. Ogio</i>	
RECENT RESULTS OF COSMIC RAY MEASUREMENTS FROM ICECUBE AND ICETOP	134
<i>D. Soldin</i>	
RESULTS FROM ICECUBE	150
<i>D. Williams</i>	
PROGRESSES OF THE DARK MATTER PARTICLE EXPLORER EXPERIMENT	166
<i>Q. Yuan</i>	

INVITED TALKS

COSMIC RAY DETECTORS AND OBSERVATIONAL BREAKTHROUGHS IN ATMOSPHERIC ELECTRICITY	182
<i>R. Abbasi</i>	
COSMIC NEUTRINOS AND THE COSMIC-RAY ACCELERATOR TXS 0506+056	202
<i>F. Halzen</i>	
SOLAR AND HELIOSPHERIC PHYSICS.....	216
<i>S. Dalla</i>	
NEUTRINOS AT THE 36 TH INTERNATIONAL COSMIC RAY CONFERENCE 2019	230
<i>A. Kappes</i>	
GAMMA RAYS: DIRECT OBSERVATIONS.....	253
<i>R. Rando</i>	
NEWS FROM COSMIC RAY AIR SHOWERS (COSMIC RAY INDIRECT - CRI RAPPORTEUR).....	268
<i>F. Schroeder</i>	
SUMMARY OF THE 36 TH ICRC GAMMA-RAY INDIRECT SESSIONS.....	289
<i>J. Sitarek</i>	
INDIRECT (AND DIRECT) DARK MATTER SEARCHES AT THE ICRC 2019.....	311
<i>C. Weniger</i>	
THE ORIGINS OF THE HIGHEST ENERGY PARTICLES IN NATURE - WHERE WE'VE GOT TO AND WHERE WE GO NEXT	335
<i>A. Watson</i>	

CRD - COSMIC RAY DIRECT

MEASUREMENTS OF HEAVY COSMIC RAY NUCLEI FLUXES WITH CALET	347
<i>Y. Akaike</i>	
ELEMENTAL SOURCE COMPOSITION MEASUREMENTS AND THE ORIGIN OF GALACTIC COSMIC RAYS – ACE-CRIS OBSERVATIONS OF UH ELEMENTS	355
<i>W.R. Binns, M. Israel, M. Wiedenbeck, A.C. Cummings, R. Leske, R. Mewaldt, E.C. Stone, E. Christian, G.A. De Nolfo, T. von Rosenvinge</i>	
GAPS: SEARCHING FOR DARK MATTER USING ANTINUCLEI IN COSMIC RAYS.....	361
<i>R. Bird</i>	
AMS-02 ANTIPROTONS ARE CONSISTENT WITH A SECONDARY ASTROPHYSICAL ORIGIN.....	369
<i>M. Boudaud, Y. Genolini, L. Derome, J. Lavalle, D. Maurin, P. Salati, P.D. Serpico</i>	
VELA AS THE SOURCE OF GALACTIC COSMIC RAYS ABOVE 100 TEV.....	377
<i>M. Bouyahiaoui, M. Kachelrieß, D. Semikoz</i>	
NON-LINEAR DIFFUSION OF COSMIC RAYS ESCAPING FROM SUPERNOVAE REMANENTS IN THE COLD PARTIALLY NEUTRAL ATOMIC AND MOLECULAR PHASES	386
<i>L. Brahimi, A. Marcowith, V. Ptuskin</i>	

OUTREACH, INVESTIGATION, MUONS, AND THE SOUTH ATLANTIC ANOMALY	395
<i>K. Cecire, S. Carrillo, J. Chorny, D. Gayoso, R. Gonzalez, M. Haacke, S. Olivares, J. Wegner</i>	
INTERPLANETARY MAGNETIC FIELD PARAMETERS AFFECTING COSMIC RAY FORBUSH DECREASE	403
<i>D.M.L. Chauhan, M.K. Richharia, B. Soni</i>	
STUDY OF HYSTERESIS EFFECT BETWEEN COSMIC RAY INTENSITY AND SOLAR INDICES	417
<i>D.M.L. Chauhan, M.K. Richharia</i>	
STUDY OF A LARGE FORBUSH DECREASE OF JULY 2017	424
<i>D.M.L. Chauhan, V. Chaudhary, M.K. Richharia</i>	
ON-ORBIT PERFORMANCE OF THE ISS-CREAM SCD	429
<i>G. Choi</i>	
PERFORMANCE CHARACTERISTICS OF THE IONOSPHERIC NEUTRON CONTENT ANALYZER (INCA)	437
<i>J.G. Mitchell, A. Bruno, S. Candey, G.A. De Nolfo, J. Dumonthier, I. Liceaga-Indart, I. Rankin, K. Rankin, J.M. Ryan, S. Stochaj, G. Suarez</i>	
FITTING B/C COSMIC-RAY DATA IN THE AMS-02 ERA	445
<i>L. Derome, D. Maurin, P. Salati, M. Boudaud, Y. Genolini, P. Kunzé</i>	
COSMIC RAY DETECTION AND IDENTIFICATION AT ANTARCTICA IN A GROUND LEVEL EXPERIMENT WITH NTD	453
<i>S. Dey, R. Bhattacharyya, S. Ghosh, A. Maulik, S. Raha, D. Syam</i>	
HELIUM SPECTRUM IN THE COSMIC RAYS MEASURED BY THE DAMPE DETECTOR	460
<i>M. Di Santo, V. Gallo, P.X. Ma, R. Qiao, Y.F. Wei</i>	
MULTI-MESSENGER CONSTRAINTS TO THE LOCAL EMISSION OF COSMIC-RAY ELECTRONS	468
<i>F. Donato, S. Manconi, M. DiMauro</i>	
PRODUCTION CROSS SECTIONS OF COSMIC ANTIPROTONS IN THE LIGHT OF NEW DATA FROM THE NA61 AND LHCb EXPERIMENTS	476
<i>F. Donato, M. Korsmeier, M. DiMauro</i>	
OVERALL STATUS OF THE HIGH ENERGY COSMIC RADIATION DETECTION FACILITY ONBOARD THE FUTURE CHINA'S SPACE STATION	483
<i>Y. Dong, S. Zhang, G. Ambrosi</i>	
CHARGE MEASUREMENT OF COSMIC RAY NUCLEI WITH THE PSD OF DAMPE	492
<i>T. Dong, Y. Zhang, P. Ma, P. Bernardini</i>	
NEURAL NETWORKS FOR ELECTRON IDENTIFICATION WITH DAMPE	500
<i>D. Droz, A. Tykhonov, X. Wu</i>	
CORE-COLLAPSE SUPERNOVAE AS COSMIC RAY SOURCES	508
<i>V. Dwarkadas, A. Marcowith, M. Renaud, V. Tatischeff, G. Giacinti</i>	
STUDY OF THE LATERAL DISTRIBUTION FUNCTIONS OF ELECTRON AND MUON BUNDLES USING TRASGO DETECTORS	516
<i>P. Cabanelas, A. Álvarez Díez, Y. Fontenla, J.A. Garzon</i>	

UNVEILING THE ORIGIN OF COSMIC-RAY LEPTONS IN LIGHT OF THE RECENT HAWC TEV-HALO OBSERVATIONS.....	525
<i>O. Fornieri, D. Gaggero, D. Grasso</i>	
CHARACTERIZATION OF PLASTIC SCINTILLATOR TILES EQUIPPED WITH SIPMS FOR THE HIGH ENERGY COSMIC-RADIATION DETECTION (HERD) EXPERIMENT.....	533
<i>F. Gargano, A.D. Benedittis, F. Palma, P.d. Luque, M.D. Santo, L.D. Venere, P. Fusco, F. Gargano, F. Giordano, F. Loparco, S. Loporchio, M.N. Mazziotta, M. Mongelli, D. Serini, G.T. Elipe, Z.M. Wang</i>	
THE TRISTAN ANTARCTIC COSMIC RAY DETECTOR.	541
<i>D. García Castro, J.A. Garzon</i>	
MIDAS: A PARTICLE IDENTIFICATION TOOL FOR THE TRAGALDABAS COSMIC RAY TELESCOPE.....	549
<i>P. Cabanelas, Y. Fontenla, J.A. Garzon</i>	
COSMIC RAY TRANSPORT FROM AMS-02 B/C DATA: BENCHMARK MODELS AND INTERPRETATION	556
<i>Y. Genolini, M. Boudaud, P.I. Batista, S. Caroff, L. Derome, J. Laval, A. Marcowith, D. Maurin, V. Poireau, V. Poulin, S. Rosier, P. Salati, P.D. Serpico, M. Vecchi</i>	
NUMERICAL SIMULATIONS OF COSMIC-RAY ACCELERATION AT CORE-COLLAPSE SUPERNOVAE.....	564
<i>G. Giacinti, V. Dwarkadas, A. Marcowith, A. Chiavassa</i>	
COSMIC-RAY DIFFUSION AND GALACTIC MAGNETIC FIELD MODELS	572
<i>G. Giacinti</i>	
RECURRENT AND NON-RECURRENT GALACTIC COSMIC-RAY FLUX SHORT-TERM VARIATIONS OBSERVED WITH LISA PATHFINDER.....	580
<i>S. Benelli, C. Grimani, M. Fabi, N. Finetti, M. Villani</i>	
A NOVEL ANALYTICAL MODEL OF THE MAGNETIC FIELD CONFIGURATION IN THE GALACTIC CENTER EXPLAINING THE DIFFUSE GAMMA-RAY EMISSION	588
<i>M. Guenduez, J. Becker Tjus, K. Ferrière, R.J. Dettmar, D. Bomans</i>	
HYBRID PORTABLE LOW-COST AND MODULAR COSMIC RAY MUON AND NEUTRON DETECTOR.....	596
<i>X. He, C. Butler, M. Steele, S. Syed, J. Shirk, N. Qutob, E. Knutson, Y.C. Jao, T.C. Wei</i>	
STUDY ON THE 3D ANISOTROPIC PROPAGATION OF GALACTIC COSMIC RAYS	604
<i>H. Hu, W. Liu, S.J. Lin, Y.Q. Guo</i>	
PROPAGATION OF COSMIC RAYS AND THEIR SECONDARIES IN THE INTRACLUSTER MEDIUM	615
<i>S. Hussain, R. Alves Batista, E.M. de Gouveia Dal Pino</i>	
THREE DIMENSIONAL GLOBAL TEST PARTICLE SIMULATION OF COSMIC-RAY ACCELERATION AND ESCAPE IN SUPERNOVA REMNANTS	623
<i>S.F. Kamijima, Y. Ohira</i>	
E/P SEPARATION STUDY USING THE ISS-CREAM TOP AND BOTTOM COUNTING DETECTORS.....	630
<i>S. Kang</i>	

ISS-CREAM FLIGHT OPERATION	638
<i>K.C. Kim</i>	
ON-ORBIT PERFORMANCE OF THE ISS-CREAM CALORIMETER	644
<i>K.C. Kim</i>	
TOWARDS UNDERSTANDING THE ORIGIN OF COSMIC-RAY POSITRONS	652
<i>Z. Weng</i>	
HNX/SUPERTIGER SILICON STRIP DETECTOR RESPONSE TO NUCLEI IN LEAD PRIMARY AND FRAGMENTED TEST BEAMS	660
<i>J.F. Krizmanic, Y. Akaike, D.L. Braun, R.G. Bose, J. Buckley, G. DeNolfo, J. Dumonthier, P. Dowkontt, Z. Hughes, I. Liceaga-Indart, J. Link, J. Mitchell, G. Mitchell, S. Nutter, G. Suarez, M. Olevitch, T. Tatoli, G.E. Simburger, W.R. Binns, T. Brandt, M. Israel, A. Labrador, M. Wiedenbeck, R. Mewaldt, B.F. Rauch, K. Sakai, M. Sasaki, E.C. Stone, N. Walsh, C.J. Waddington</i>	
GALACTIC COSMIC RAY ENERGY SPECTRA FOR HEAVY ELEMENTS (NE TO ZN) FROM ~0.8 TO ~10 GEV/NUC WITH THE SUPERTIGER INSTRUMENT	668
<i>A. Labrador, W.R. Binns, R.G. Bose, T.J. Brandt, P.F. Dowkontt, T. Hams, M.H. Israel, J.T. Link, R.A. Mewaldt, J.W. Mitchell, R.P. Murphy, B.F. Rauch, K. Sakai, M. Sasaki, E.C. Stone, C.J. Waddington, N.E. Walsh, J.E. Ward, M.E. Wiedenbeck</i>	
SILICON PHOTOMULTIPLIER USE IN PARTICLE ASTROPHYSICS AND HELIOPHYSICS MISSIONS	676
<i>J. Link, Y. Akaike, W. R. Binns, R. G. Bose, T. J. Brandt, J. H. Buckley, S. O. Cannady, G. A De Nolfo, P. F Dowkontt, J. J. Du Monthier, Z. D. Hughes, I. Liceaga-Indart, M. H Israel, J. F Krizmanic, A. W. Labrador, R. A Mewaldt, J. G. Mitchell, J. W Mitchell, S. Nutter, B. F Rauch, K. Sakai, M. Sasaki, E. C Stone, G. Suarez, T. Tatoli, C. J. Waddington, M. E. Wiedenbeck</i>	
TRACK RECONSTRUCTION FOR ISS-CREAM RESULTING IN IMPROVED ENERGY AND CHARGE RESOLUTIONS	684
<i>J.P. Lundquist</i>	
A METHOD OF ALIGNMENT FOR PLASTIC SCINTILLATOR DETECTOR OF DAMPE	692
<i>P. Ma</i>	
MEASUREMENT OF THE ENERGY SPECTRA OF CARBON AND OXYGEN NUCLEI IN COSMIC RAYS WITH CALET	700
<i>P. Maestro</i>	

VOLUME 2

MEASUREMENT OF THE PROTON SPECTRUM WITH CALET ON THE ISS	708
<i>P.S. Marrocchesi</i>	
COSMIC RAY SMALL-SCALE ANISOTROPIES IN QUASI-LINEAR THEORY	716
<i>P. Mertsch, M. Ahlers</i>	

COSMIC RAY ELECTRON AND POSITRON SPECTRUM WITH THE PAMELA EXPERIMENT	724
<i>V. Mikhailov, O. Adriani, G. Barbarino, G. A. Bazilevskaya, R. Bellotti, M. Boezio, E. A. Bogomolov, M. Bongi, V. Bonvicini, A. Bruno, F. S. Cafagna, D. Campana, P. Carlson, M. Casolino, G. Castellini, C. De Santis, V. Di Felice, A. M. Galper, A. V. Karelin, S. V. Koldashov, S. A. Koldobsky, A. A. Kvashnin, A. N. Kvashnin, A. A. Leonov, V. V. Malakhov, L. Marcell, M. Martucci, A. G. Mayorov, W. Menn, M. Mergé, E. Mocchiutti, A. Monaco, N. Mori, R. Munin, G. Osteria, P. Papini, B. Panico, M. Pearce, P. Picozza, M. Ricci, S. B. Ricciarini, M. Simon, R. Sparvoli, P. Spillantini, Y. I. Stozhkov, A. Vacchi, E. Vannuccini, I. Vasiliev, S. A. Voronov, Y. T. Yurkin, G. Zampa, N. Zampa</i>	
GALPROP CODE FOR GALACTIC COSMIC RAY PROPAGATION AND ASSOCIATED PHOTON EMISSIONS	729
<i>I. Moskalenko, G. Johannesson, T. Porter</i>	
ANALYSIS OF CALET DATA FOR ANISOTROPY IN ELECTRON+POSITRON COSMIC RAYS	737
<i>H. Motz, Y. Asaoka</i>	
ANISOTROPY SEARCHES WITH DAMPE	745
<i>M. Munoz Salinas, M. Stolpovskiy, S. Lei, E. Catanzani</i>	
BARE NEUTRON COUNTER AND NEUTRON MONITOR RESPONSE TO COSMIC RAYS DURING A 1995 LATITUDE SURVEY	753
<i>W. Nuntiyakul, A. Sáiz, D. Ruffolo, P.S. Mangeard, P. Evenson, J.W. Bieber, J. Clem, R. Pyle, M. Duldig, J. Humble</i>	
TIME PROFILE OF FLUORESCENCE IN ORGANIC SCINTILLATOR OUT TO 10 MICROSECONDS	761
<i>S. Nutter, T. Anderson, Y.H. Chen, S. Coutu, T. LaBree, J. Link, J.W. Mitchell, S.I. Mognet, K. Wallace, M. Yu</i>	
ACCELERATION AND ESCAPE OF FIRST COSMIC RAYS	769
<i>Y. Ohira, K. Murase</i>	
LOCAL INTERSTELLAR COSMIC RAYS FROM DIRECT MEASUREMENTS AND FROM MULTIFREQUENCY OBSERVATIONS OF INTERSTELLAR EMISSIONS	775
<i>E. Orlando</i>	
COSMIC-RAY ISOTOPE MEASUREMENTS WITH HELIX	777
<i>N. Park, L. Beaufore, R. Mbarek, D. Muller, E. Schreyer, S. Wakely, T. Werner, I. Wisher, M. Tabata, M. Gebhard, B. Kunkler, J. Musser, K. Michaels, G. Visser, E. Ellingwood, D. Hanna, S. O'Brien, T. Rosin, S. Nutter, P. Allison, J. Beatty, K. McBride, Y. Chen, S. Coutu, I. Mognet, M. Yu, N. Green, G. Tarle, A. Tomasch</i>	
THE TRACKING SYSTEM OF HERD	785
<i>C. Perrina, G. Ambrosi, P. Azzarello, F. Cadoux, E. Catanzani, Y. Favre, D. La Marra, G. Silvestre, J. Wang, X. Wu</i>	
PORTABLE AND SMALL ULTRAVIOLET RADIATION DETECTOR TO OBTAIN THE ENERGY AND RATE OF PARTICLES AT DIFFERENT HEIGHTS	793
<i>E. Ponce, H. Salazar, O. Martinez, J. Ponce</i>	
REXUS-25 ROCKET FLIGHT OF A CUBESAT COSMIC-RAY DETECTOR	799
<i>B. Pont, J. Beurskens, J. Dalderup, P. Dolron, J. Gubbels, J. Hörandel, R. Jordans, H. Pourshaghghi, D. Szálas-Motesiczky, T. van Vliet, M. Wijnvliet, J. Witteman</i>	

RECENT PROGRESS ON THE GAPS TIME OF FLIGHT SYSTEM	807
<i>S. Quinn</i>	
CALET ULTRA HEAVY COSMIC RAY OBSERVATIONS ON THE ISS.....	815
<i>B.F. Rauch, W. Binns</i>	
SUPERTIGER-2 2018 FLIGHT PAYLOAD RECOVERY AND PRELIMINARY INSTRUMENT ASSESSMENT	823
<i>B.F. Rauch, R.G. Bose, A.T. West, L. Lisalda, Q. Abarr, Y. Akaike, W. Binns, T. Brandt, D.L. Braun, P. Dowkontt, S.P. Fitzsimmons, T. Hams, M. Israel, A. Labrador, J. Link, R. Mewaldt, J.W. Mitchell, K. Sakai, F. San Sebastian, M. Sasaki, G.E. Simburger, E.C. Stone, C.J. Waddington, N. Walsh, M.E. Wiedenbeck, W.V. Zober</i>	
ANALYSIS OF THE ATMOSPHERIC EFFECT ON THE TRAGALDABAS HIGH RESOLUTION COSMIC RAY DETECTOR.....	831
<i>I. Riádigos</i>	
CALIBRATION OF THE AEROGEL TILES FOR THE HELIX RICH	839
<i>P. Allison, J. Beatty, L. Beaufore, Y. Chen, S. Coutu, E. Ellingwood, M. Gebharb, N. Green, D. Hanna, B. Kunkler, S.I. Mognet, R. Mbarek, K. McBride, K. Michaels, D. Muller, J. Musser, S. Nutter, S. O'Brien, N. Park, T. Rosin, E. Schreyer, G. Tarle, M. Tabata, A. Tomasch, G. Visser, S. Wakely, T. Werner, I. Wisher, M. Yu</i>	
SEARCH FOR COSMIC-RAY ANTIDEUTERONS WITH BESS-POLAR II.....	846
<i>K. Sakai, K. Abe, H. Fuke, S. Haino, T. Hams, M. Hasegawa, K.C. Kim, M.H. Lee, Y. Makida, J.W. Mitchell, J. Nishimura, M. Nozaki, R. Orito, J.F. Ormes, N. Picot-Clemente, M. Sasaki, E.S. Seo, R.E. Streitmatter, J. Suzuki, K. Tanaka, N. Thakur, A. Yamamoto, T. Yoshida, K. Yoshimura</i>	
THE HIGH ENERGY PARTICLE DETECTOR ONBOARD CSES-02 SATELLITE	852
<i>V. Scotti, G. Osteria</i>	
FRONT-END ELECTRONICS FOR THE GAPS TRACKER	859
<i>V. Scotti, A. Boiano, L. Fabris, M. Manghisoni, G. Osteria, F. Perfetto, V. Re, E. Riceputi, G. Zampa</i>	
COSMIC RAY ENERGETICS AND MASS FOR THE INTERNATIONAL SPACE STATION (ISS-CREAM).....	866
<i>E.S. Seo</i>	
PRODUCTION OF SILICA AEROGEL RADIATOR TILES FOR THE HELIX RICH DETECTOR	874
<i>P. Allison, J. Beatty, L. Beaufore, Y. Chen, S. Coutu, E. Ellingwood, M. Gebhard, N. Green, D. Hanna, B. Kunkler, S.I. Mognet, R. Mbarek, K. McBride, K. Michaels, D. Muller, J. Musser, S. Nutter, S. O'Brien, N. Park, T. Rosin, E. Schreyer, G. Tarle, M. Tabata, A. Tomasch, G. Visser, S. Wakely, T. Werner, I. Wisher, M. Yu</i>	
COSMIC-RAY ELEMENTAL SPECTRA MEASURED WITH ISS-CREAM	881
<i>R. Takeishi</i>	
THE OLVE-HERO CALORIMETER PROTOTYPE BEAM TESTS AT CERN SPS.....	889
<i>L. Tkachev, V. Grebenyuk, A. Krasnoperov, D. Karmanov, A. Pan, D. Podorozhny, S. Porokhovoy, A. Rogov, A. Sadovsky, Y. Sagan, I. Satyshev, M. Slunecka</i>	
EXTENDED MEASUREMENT OF COSMIC-RAY ELECTRON AND POSITRON SPECTRUM FROM CALET ON THE ISS.....	897
<i>S. Torii, Y. Asaoka</i>	

TEV--PEV HADRONIC SIMULATIONS WITH DAMPE.....	905
<i>A. Tykhonov, D. Droz, C. Yue, M. Cui, X. Li, X. Wu</i>	
AN ALL-SKY SEARCH FOR COSMIC-RAY PROTON ANISOTROPY WITH THE FERMI LARGE AREA TELESCOPE.....	913
<i>J. Vandenbroucke, M. Meehan</i>	
IS THE B/C SLOPE IN AMS-02 DATA ACTUALLY TELLING US SOMETHING ABOUT THE DIFFUSION COEFFICIENT SLOPE?	915
<i>M. Vecchi, P.I. Batista, M. Vecchi, D. Maurin, L. Derome, M. Boudaud, Y. Génolini, J. Lavalley, V. Poulin, P. Salati, P.D. Serpico</i>	
PERFORMANCE OF THE DEUTERON MASS RECONSTRUCTION WITH THE AMS-02 RICH DETECTOR.....	923
<i>M. Vecchi, E. F. Bueno</i>	
SUPERTIGER ABUNDANCES OF GALACTIC COSMIC-RAYS FOR THE CHARGE INTERVAL $Z=41-56$	930
<i>N. Walsh, W. Binns, M. Israel, R. Murphy, B.F. Rauch, J. Ward, T. Brandt, J. Link, J. Mitchell, T. Hams, K. Sakai, M. Sasaki, A. Labrador, R. Mewaldt, E.C. Stone, M. Wiedenbeck, C.J. Waddington</i>	
MEASUREMENT OF THE COSMIC-RAY PROTON + HELIUM SPECTRUM WITH DAMPE	939
<i>Z. Wang, I. De Mitri, G. Marsella, G. Torralba Elipse, I. Valino</i>	
ANISOTROPY OF PARTICLE FLUXES IN PRIMARY COSMIC RAYS MEASURED WITH THE ALPHA MAGNETIC SPECTROMETER ON THE ISS.....	947
<i>I. Gebauer, M. Graziani, J. Casaus, M. Molero, C. Mana, M.A. Velasco, M. Gervasi, P.G. Rancoita, G. La Vacca</i>	
THE DESIGN AND CONSTRUCTION OF THE HELIX RICH DETECTOR	955
<i>I. Wisher</i>	
STUDY OF COSMIC RAY PROPAGATION USING GALPROP WITH OBSERVATION DATA	963
<i>H. Wu, E.S. Seo, V. Ptuskin</i>	
MONTE CARLO SIMULATIONS OF THE ISS-CREAM INSTRUMENT	971
<i>J. Wu, Y. Amare, D. Angelaszek, N. Anthony, G.H. Choi, M. Chung, M. Copley, L. Derome, L. Eraud, C. Falana, A. Gerrety, L. Hagenau, J.H. Han, H.G. Huh, Y.S. Hwang, H.J. Hyun, H.B. Jeon, J.A. Jeon, S. Jeong, S.C. Kang, H.J. Kim, K.C. Kim, M.H. Kim, H.Y. Lee, J. Lee, M.H. Lee, C. Lamb, J.F. Liang, L. Lu, J.P. Lundquist, L. Lutz, B. Mark, A. Menchaca-Rocha, T. Mernik, M. Nester, O. Ofaha, H. Park, I.H. Park, J.M. Park, N. Picot-Clemente, S. Rostsky, E.S. Seo, J.R. Smith, R. Takeishi, T. Tatoli, P. Walpole, R.P. Weinmann, Z. Yin, Y.S. Yoon, H.G. Zhang</i>	
USING $Z \leq 2$ DATA TO CONSTRAIN COSMIC RAY PROPAGATION MODELS	978
<i>J. Wu, Y. Wang</i>	
PRECISION MEASUREMENT OF THE MONTHLY CARBON AND OXYGEN FLUXES IN COSMIC RAYS WITH THE ALPHA MAGNETIC SPECTROMETER ON THE INTERNATIONAL SPACE STATION	986
<i>F. Donnini</i>	
PARTICLE ACCELERATION BY SHOCK WAVES PROPAGATING IN A NON-UNIFORM MEDIUM	993
<i>S. Yokoyama, Y. Ohira</i>	

MEASUREMENT OF COSMIC RAY PROTON SPECTRUM WITH THE DARK MATTER PARTICLE EXPLORER	999
<i>C. Yue, A. De Benedittis, M.N. Mazziotta, S. Vitillo, Z.H. Xu, Y.H. Yu</i>	

OBSERVATION OF TIME EVOLUTION OF COSMIC RAY ELECTRON AND POSITRON FLUX WITH DARK MATTER PARTICLE EXPLORER	1007
<i>J. Zang, Y. Liu, Q. Yuan, C. Yue</i>	

ELEMENTAL ANALYSIS OF COSMIC-RAY FLUX WITH DAMPE	1014
<i>Y. Zhang, M. Cui, T. Dong, A. Surdo, L. Wu, Y. Zhang, C. Liu</i>	

TOWARDS UNDERSTANDING THE ORIGIN OF COSMIC RAYELECTRONS WITH PRECISION RESULTS FROM AMS ON ISS	1021
<i>W. Xu</i>	

CRI - COSMIC RAY INDIRECT

OBSERVATIONS OF TERRESTRIAL GAMMA-RAY FLASHES AT THE TELESCOPE ARRAY COSMIC RAY DETECTOR	1029
<i>J. Belz, R. Abbasi, R. LeVon, J. Remington, P. Krehbiel, W. Rison, D. Rodeheffer, M. Stanley</i>	

TALE FD COSMIC RAYS COMPOSITION MEASUREMENT	1034
<i>T. AbuZayyad</i>	

HIGH SCHOOL STUDENTS' MUON UNDERGROUND SHIELDING EXPERIMENT (MUSE)	1040
<i>N. Unterman, M. Adams, T. Blackmore, E. Copeland, M. Senser, H. Seiden, A. Valsamis, B. Grey, J. Miller, M. Miller, A. Sears, P. Graham, E. Winkler</i>	

COSMIC RAY SPECTRUM AND COMPOSITION FROM PEV TO EEV FROM THE ICECUBE NEUTRINO OBSERVATORY	1045
<i>K. Andeen, M. Plum</i>	

OUTREACH COSMIC RAY ACTIVITIES (OCRA): A PROGRAM OF ASTROPARTICLE PHYSICS OUTREACH EVENTS FOR HIGH-SCHOOL STUDENTS	1053
<i>C. Aramo, S. Hemmer</i>	

PARAMETRIZATION OF XMAX DISTRIBUTIONS IN THE ULTRA-HIGH ENERGY REGIME	1061
<i>L. Arbeletche, V. de Souza</i>	

PRELIMINARY RESULTS OF THE DESIGN AND DEVELOPMENT OF THE DATA ACQUISITION AND PROCESSING SYSTEM FOR THE LAGO COLLABORATION	1069
<i>L.H. Arnaldi, D. Cazar, M. Audelo, I. Sidelnik</i>	

THE SPECTRUM OF THE LIGHT COMPONENT OF TEV COSMIC RAYS MEASURED WITH HAWC	1078
<i>J.C. Arteaga-Velázquez, J.D. Alvarez</i>	

MUON CONTENT IN AIR SHOWERS BETWEEN 10 PEV AND 1 EEV DETERMINED FROM MEASUREMENTS WITH KASCADE-GRANDE	1086
<i>J.C. Arteaga-Velázquez, D. Rivera Rangel, D. Rivera-Rangel, W.D. Apel, K. Bekk, M. Bertaina, J. Blümer, H. Bozdog, E. Cantoni, A. Chiavassa, F. Cossavella, K. Daumiller, V. de Souza, F.D. Pierro, P. Doll, R. Engel, D. Fuhrmann, A. Gherghel-Lascu, H.J. Gils, R. Glasstetter, C. Grupen, A. Haungs, D. Heck, J.R. Hörandel, T. Huege, K.H. Kampert, D. Kang, H.O. Klages, K. Link, P. Luczak, H.J. Mathe, H.J. Mayer, J. Milke, C. Morello, J. Oehlschläger, S. Ostapchenko, T. Pierog, H. Rebel, M. Roth, H. Schieler, S. Schoo, F.G. Schröder, O. Sima, G. Toma, G.C. Trinchero, H. Ulrich, A. Weindl, J. Wochele, J. Zabierowski</i>	
COMPARISON OF LIGHT PULSES' NUMBER INDUCED BY COSMIC RADIATIONS AT AIRCRAFT FLIGHT ALTITUDE USING EXPERIMENTAL DATA VERSUS MCNP6	1094
<i>S. Assad</i>	
ICEACT, SMALL IMAGING AIR CHERENKOV TELESCOPES FOR ICECUBE	1102
<i>M. Schaufel, K. Andeen, J. Auffenberg</i>	
MITO, A NEW DIRECTIONAL MUON TELESCOPE DESIGN. FIRST OBSERVATIONS	1110
<i>S. Ayuso, J.I. García Tejedor, J.J. Blanco, R. Gómez Herrero, O. García Población, J. Medina, M. Prieto, A. López Comazzi</i>	
PERFORMANCE OPTIMIZATION OF AIR SHOWER SIMULATIONS WITH CORSIKA.....	1118
<i>D. Baack</i>	
INFLUENCE OF GALACTIC MAGNETIC FIELD ON LARGE SCALE ANISOTROPIES OF ULTRA-HIGH ENERGY COSMIC RAYS	1126
<i>A. Bakalova, P. Travnicek, J. Vicha</i>	
FREQUENCY-OPTIMISED RADIO AIR ARRAYS FOR AIR-SHOWER DETECTION	1134
<i>A. Balagopal V., A. Haungs, T. Huege, M. Renschler, F.G. Schröder, A. Zilles</i>	
MEASUREMENT OF THE ELECTRICAL PROPERTIES OF A THUNDERCLOUD THROUGH MUON IMAGING BY THE GRAPES-3 EXPERIMENT.	1142
<i>B. Hariharan, S. Ahmad, A. Chandra, S.R. Dugad, S.K. Gupta, Y. Hayashi, P. Jagadeesan, A. Jain, S. Kawakami, H. Kojima, P.K. Mohanty, S.D. Morris, Y. Muraki, P.K. Nayak, A. Oshima, P.S. Rakshe, K. Ramesh, B.S. Rao, L.V. Reddy, S. Shibata, K. Tanaka, M. Zuberi</i>	
DEPENDENCE OF HADRONIC INTERACTION MODELS IN ATMOSPHERIC ELECTRIC FIELD SIMULATIONS FOR GRAPES-3.	1151
<i>B. Hariharan, S. Ahmad, M. Chakraborty, A. Chandra, S.R. Dugad, S.K. Gupta, Y. Hayashi, S.S.R. Inbanathan, P. Jagadeesan, A. Jain, P. Jain, V.B. Jhansi, S. Kawakami, H. Kojima, S. Mahapatra, P.K. Mohanty, S.D. Morris, Y. Muraki, P.K. Nayak, A. Oshima, D. Pattanaik, P.S. Rakshe, K. Ramesh, B.S. Rao, L.V. Reddy, S. Sharma, S. Shibata, K. Tanaka, F. Varsi, M. Zuberi</i>	
MEASUREMENT OF THE INTEGRAL INTENSITY OF NEAR HORIZONTAL MUONS WITH HAWC	1159
<i>A. Barber, D. Kieda, R.W. Springer</i>	
MEASUREMENTS OF THE VERY-FORWARD ENERGY IN PP COLLISIONS AT THE LHC AND CONSTRAINTS FOR COSMIC RAY AIR SHOWERS.....	1167
<i>S. Baur, R. Ulrich</i>	
FIRST RESULTS FROM NICHE AND THE NICHE-TALE HYBRID DETECTOR.....	1175
<i>D. Bergman, J.F. Krizmanic, K. Nakai, Y. Omura, Y. Tsunesada</i>	

COMBINED FIT OF THE SPECTRUM AND COMPOSITION FROM TELESCOPE ARRAY	1183
<i>D. Bergman</i>	
TA 10 YEAR STEREO COMPOSITION MEASUREMENT	1191
<i>D. Bergman, T. Stroman</i>	
SEARCH FOR ULTRA-HIGH ENERGY COSMIC RAYS FROM SPACE - THE JEM-EUSO PROGRAM	1197
<i>M.E. Bertaina</i>	
AN EAS-LIKE EVENT REGISTERED WITH THE TUS ORBITALDETECTOR.....	1205
<i>M.E. Bertaina, V.M. Grebenyuk, A.A. Grinyuk, M.V. Lavrova, A.V. Tkachenko, L.G. Tkachev, A.A. Botvinko, O.A. Saprykin, A.E. Puchkov, A.N. Senkovsky</i>	
THE EUSO@TURLAB PROJECT: TESTS OF MINI-EUSO ENGINEERING MODEL	1213
<i>M.E. Bertaina, M. Battisti, A. Belov, M.E. Bertaina, F. Bisconti, R. Bonino, S. Blin-Bondil, F. Cafagna, G. Cambiè, F. Capel, R. Caruso, M. Casolino, A. Cellino, I. Churilo, G. Contino, G. Cotto, A. Djakonow, T. Ebisuzaki, F. Fausti, F. Fenu, C. Fornaro, A. Franceschi, C. Fuglesang, D. Gardiol, P. Gorodetzky, F. Kajino, P. Klimov, L. Marcelli, W. Marszał, M. Mignone, A. Murashov, T. Napolitano, G. Osteria, M.I. Panasyuk, E. Parizot, A. Poroshin, P. Picozza, L.W. Piotrowski, Z. Plebaniak, G. Prevôt, M. Przybylak, E. Reali, M. Ricci, N. Sakaki, K. Shinozaki, G. Suino, J. Szabelski, Y. Takizawa, M. Traiche, S. Turriziani</i>	
SPATIAL AND TEMPORAL CHARACTERISTICS OF EAS WITH DELAYED PARTICLES.....	1221
<i>R. Beisembaev, D. Beznosko, E. Beisembaeva, O.D. Dalkarov, V. Mossunov, V. Ryabov, S. Shaulov, M. Vildanova, V. Zhukov, K. Baigarin, T. Sadykov</i>	
GAMMA-RAY BURSTS AS SOURCES OF ULTRA-HIGH ENERGY COSMIC RAYS ACROSS THE ANKLE	1229
<i>D. Biehl, D. Boncioli, A. Fedynitch, J. Heinze, A. Rudolph, W. Winter</i>	
EUSO-TA GROUND BASED FLUORESCENCE DETECTOR: ANALYSIS OF THE DETECTED EVENTS	1237
<i>F. Bisconti, J.W. Belz, M.E. Bertaina, S. Blin-Bondil, F. Capel, M. Casolino, T. Ebisuzaki, J. Eser, P. Gorodetzky, J.N. Matthews, E. Parizot, L.W. Piotrowski, Z. Plebaniak, G. Prevôt, M. Putis, H. Sagawa, N. Sakaki, H. Shin, K. Shinozaki, P. Sokolsky, Y. Takizawa, Y. Tameda, G.B. Thomson</i>	
MINI-EUSO ENGINEERING MODEL: TESTS IN OPEN-SKY CONDITION	1245
<i>F. Bisconti, D. Barghini, M. Battisti, A. Belov, M.E. Bertaina, S. Blin-Bondil, F. Cafagna, G. Cambiè, F. Capel, M. Casolino, A. Cellino, I. Churilo, G. Cotto, A. Djakonow, T. Ebisuzaki, F. Fausti, F. Fenu, C. Fornaro, A. Franceschi, C. Fuglesang, D. Gardiol, P. Gorodetzky, F. Kajino, P. Klimov, L. Marcelli, W. Marszał, M. Mignone, H. Miyamoto, A. Murashov, T. Napolitano, G. Osteria, M.I. Panasyuk, E. Parizot, A. Poroshin, P. Picozza, L.W. Piotrowski, Z. Plebaniak, G. Prevôt, M. Przybylak, E. Reali, M. Ricci, N. Sakaki, K. Shinozaki, G. Suino, J. Szabelski, Y. Takizawa, M. Traiche, S. Turriziani</i>	
TEST BENCHES FOR THE UPGRADE OF THE PIERRE AUGER OBSERVATORY ELECTRONICS	1253
<i>M. Bohacova</i>	
MICROPHYSICS OF ELECTRON ACCELERATION AND HEATING AT NONRELATIVISTIC PERPENDICULAR SHOCKS OF YOUNG SUPERNOVA REMNANTS	1261
<i>A. Bohdan, M. Pohl, J. Niemiec, T. Amano, M. Hoshino, Y. Matsumoto</i>	

A COSMIC RAYS TRACKING SYSTEM FOR THE STABILITY MONITORING OF HISTORICAL BUILDINGS	1267
<i>G. Bonomi, M. Caccia, A. Donzella, D. Pagano, V. Villa, A. Zenoni</i>	
THE AMIGA UNDERGROUND MUON DETECTOR OF THE PIERRE AUGER OBSERVATORY - PERFORMANCE AND EVENT RECONSTRUCTION.....	1276
<i>A.M. Botti</i>	
THE AACHEN MUON DETECTOR FOR TESTING THE LOCAL PRODUCTION OF SCINTILLATING SURFACE DETECTORS FOR AUGERPRIME.....	1284
<i>T. Bretz, P. Ferreira, A. Garcia, T. Hebbeker, J. Kemp, C. Peters, J. Schumacher</i>	
TOWARDS AN IMPROVED MASS COMPOSITION ANALYSIS WITH LOFAR.....	1291
<i>S. Buitink, A. Corstanje, A. Bonardi, H. Falcke, B.M. Hare, J.R. Hörandel, T. Huege, G. Krampah, P. Mitra, A. Nelles, H. Pandya, J.P. Rachen, L. Rossetto, O. Scholten, S. ter Veen, T.N.G. Trinh, T. Winchen</i>	
ANISOTROPIES OF THE HIGHEST ENERGY COSMIC-RAY EVENTS RECORDED BY THE PIERRE AUGER OBSERVATORY IN 15 YEARS OF OPERATION	1299
<i>L. Caccianiga</i>	
LATEST RESULTS FOR PROTON-PROTON CROSS SECTION MEASUREMENTS WITH THE TOTEM EXPERIMENT AT LHC.	1307
<i>F. Cafagna</i>	
THE ISSUE WITH DIFFUSIVE SHOCK ACCELERATION.....	1315
<i>D. Caprioli, C. Haggerty</i>	
THE ROLE OF RE-ACCELERATION IN THE UNDERSTANDING OF COSMIC-RAY DIRECT AND INDIRECT DATA	1323
<i>M. Cardillo</i>	
ESTIMATING THE SENSITIVITY OF THE EXPANDED OVRO-LWA ARRAY TO COSMIC- RAY PRIMARY COMPOSITION	1331
<i>W.R. Carvalho, A. Romero-Wolf, K. Belov, L. D'Addario, M. Anderson, M. Eastwood, G. Hallinan, J. Kocz, J. Lamb, R. Monroe, A. Nelles, K. Plant</i>	
MINI-EUSO EXPERIMENT TO STUDY UV EMISSION OF TERRESTRIAL AND ASTROPHYSICAL ORIGIN ONBOARD OF THE INTERNATIONAL SPACE STATION.....	1339
<i>M. Casolino, M. Battisti, A. Belov, M. Bertaina, F. Bisconti, S. Blin-Bondil, F. Cafagna, G. Cambiè, F. Capel, I. Churilo, G. Cotto, A. Djakonow, T. Ebisuzaki, F. Fausti, F. Fenu, C. Fornaro, A. Franceschi, C. Fuglesang, P. Gorodetzky, A. Haungs, F. Kajino, P. Klimov, L. Marcelli, W. Marsza, M. Mignone, H. Miyamoto, A. Murashov, T. Napolitano, G. Osteria, M.I. Panasyuk, A. Poroshin, E. Parizot, P. Picozza, L.W. Piotrowski, Z. Plebaniak, G. Prevôt, M. Przybylak, E. Reali, M. Ricci, N. Sakaki, K. Shinozaki, J. Szabelski, Y. Takizawa, M. Traiche, S. Turriziani</i>	
WORKING GROUP REPORT ON THE COMBINED ANALYSIS OF MUON DENSITY MEASUREMENTS FROM EIGHT AIR SHOWER EXPERIMENTS	1347
<i>L. Cazon</i>	
PLANNING, DESIGN, CONSTRUCTION, AND TESTING AN EXPERIMENTAL SYSTEM TO CHARACTERIZE PHOTOMULTIPLIERS TYPE EMI 9954B USING COSMIC RAYS.....	1355
<i>C.A. Cervantes Vera, J. Felix, L. Arceo</i>	

NON-LINEARITY CORRECTION OF PMT RESPONSE ON THE OBSERVED PARTICLE DENSITIES IN GRAPES-3	1361
<i>A. Chandra, S. Ahmad, M. Chakraborty, S.R. Dugad, S.K. Gupta, B. Hariharan, Y. Hayashi, S.S.R. Inbanathan, P. Jagadeesan, A. Jain, P. Jain, V.B. Jhansi, S. Kawakami, H. Kojima, S. Mahapatra, P.K. Mohanty, S.D. Morris, P.K. Nayak, A. Oshima, D. Pattanaik, P.S. Rakshe, K. Ramesh, B.S. Rao, L.V. Reddy, S. Shibata, F. Varsi, M. Zuberi</i>	
STATUS AND FIRST RESULT OF LHAASO-WCDA	1370
<i>M. Chen</i>	
A STUDY ON THE IMPACT OF THE LHAASO-WCDA PHOTOMULTIPLIER TUBE AFTERPULSE	1377
<i>B. Chen, B. Gao, M. Chen, Z. Pang, M. Zha, Z. Yao</i>	
DETECTOR SIMULATION OF LHAASO-KM2A WITH GEANT4	1382
<i>S. Chen</i>	
ANALYSIS OF ANISOTROPY OF ULTRAHIGH ENERGY COSMIC RAY ARRIVAL DIRECTION AND ENERGY SPECTRUM DETECTED BY TELESCOPE ARRAY EXPERIMENT	1390
<i>W. Cho, E. Lee, H.B. Kim</i>	
LONG TERM PERFORMANCE OF THE PIERRE AUGER OBSERVATORY	1395
<i>K. Choi</i>	

VOLUME 3

THE RULE GOVERNING THE ABUNDANCES OF THE COSMIC RAYS AT THE SOURCES PRIOR TO ACCELERATION	1403
<i>A. Codino</i>	
MEASUREMENT OF THE COSMIC RAY FLUX NEAR THE SECOND KNEE WITH THE PIERRE AUGER OBSERVATORY	1412
<i>A. Coleman</i>	
PROBING THE HIGH ENERGY SPECTRUM OF NEUTRAL PIONS IN ULTRA-HIGH-ENERGY PROTON-AIR INTERACTIONS	1420
<i>L. Cazon, R. Conceição, M. Martins, F. Riehn</i>	
THE ENERGY SCALE OF THE PIERRE AUGER OBSERVATORY	1428
<i>B. Dawson</i>	
COHERENT TRANSITION RADIATION FROM THE GEOMAGNETIC AIR SHOWER CURRENT	1436
<i>K. de Vries, S. Prohira</i>	
THE GRANDPROTO300 EXPERIMENT: A PATHFINDER WITH RICH ASTROPARTICLE AND RADIO-ASTRONOMY SCIENCE CASE	1444
<i>V. Decoene</i>	
THE ENERGY SPECTRUM OF ULTRA-HIGH ENERGY COSMIC RAYS MEASURED AT THE PIERRE AUGER OBSERVATORY AND AT THE TELESCOPE ARRAY	1452
<i>O. Deligny</i>	

FUTURE PROTON-OXYGEN BEAM COLLISIONS AT THE LHC FOR AIR SHOWER PHYSICS	1460
<i>H.P. Dembinski, R. Ulrich, T. Pierog</i>	
TECHNICAL FOUNDATIONS OF CORSIKA 8: NEW CONCEPTS FOR SCIENTIFIC COMPUTING	1468
<i>H.P. Dembinski, L. Nellen, M. Reininghaus, R. Ulrich</i>	
NEW CONSTRAINTS ON GALACTIC CRE TRANSPORT FROM RADIO CONTINUUM OBSERVATIONS.....	1476
<i>R.J. Dettmar, V. Heesen, A. Miskolczi, Y. Stein</i>	
COSMIC RAY ENSEMBLES FROM ULTRA-HIGH ENERGY PHOTONS PROPAGATING IN THE GALACTIC AND INTERGALACTIC SPACE	1484
<i>N. Dhital, O. Sushchov, J. Pekala, K. Almeida Cheminant, D. Gora, P. Homola</i>	
EUSO-SPB1: FLIGHT DATA CLASSIFICATION AND AIR SHOWER SEARCH RESULTS.....	1492
<i>A. Díaz Damian</i>	
UCIRC2: AN INFRARED CLOUD MONITOR FOR EUSO-SPB2	1500
<i>R. Diesing</i>	
ON THE ORIGIN OF ULTRA-HIGH ENERGY COSMIC RAY ANISOTROPY	1508
<i>N. Globus, C. Ding, G.R. Farrar</i>	
A THREE-DIMENSIONAL RECONSTRUCTION OF COSMIC RAY EVENTS IN ICECUBE.....	1518
<i>E. Dvorak, X. Bai, J. Gonzalez, D. Soldin</i>	
ULTRA-HIGH-ENERGY COSMIC RAYS BY CYGNUS A OR THE BULK OF NON-LOCAL RADIO GALAXIES?.....	1526
<i>B. Eichmann</i>	
FROM THE OBSERVATION OF UHECR RADIO SIGNAL IN [1-200] MHZ TO THE COMPOSITION: CODALEMA AND EXTASIS STATUS REPORT	1534
<i>A. Escudie, D. Charrier, R. Dallier, D. García-Fernández, A. Lecacheux, L. Martin, B. Revenu</i>	
RESULTS OF THE EUSO-SPB1 FLIGHT	1542
<i>J. Eser</i>	
DEVELOPMENTS IN MODELING THE GALACTIC MAGNETIC FIELD	1550
<i>G.R. Farrar, M. Unger</i>	
A NEW VIEW ON AUGER DATA AND COSMOGENIC NEUTRINOS IN LIGHT OF DIFFERENT NUCLEAR DISINTEGRATION AND AIR-SHOWER MODELS.....	1552
<i>A. Fedynitch, J. Heinze, D. Boncioli, W. Winter</i>	
RESULTS FROM THE FIRST MISSIONS OF THE JEM-EUSO PROGRAM.....	1560
<i>F. Fenu</i>	
SIMULATIONS FOR THE JEM-EUSO PROGRAM WITH ESAF.....	1568
<i>F. Fenu, K. Shinozaki, H. Miyamoto, A. Liberatore, N. Sakaki, S. Sharakin, M. Zotov, G. Chiritoi</i>	

SPACE DEBRIS DETECTION AND TRACKING WITH THE TECHNIQUES OF COSMIC RAY PHYSICS	1576
<i>H. Miyamoto, M. Battisti, A.S. Belov, F. Bisconti, R. Bonino, S. Blin-Bondil, M.E. Bertaina, F. Cafagna, G. Cambiè, F. Capel, M. Casolino, A. Cellino, I. Churilo, G. Cotto, A. Djakonow, T. Ebisuzaki, F. Fenu, F. Fausti, C. Fornaro, A. Franceschi, C. Fugelsang, D. Gardiol, P. Gorodetzky, F. Kajino, P. Klimov, L. Marcelli, W. Marszal, M. Mignone, A. Murashov, T. Napolitano, G. Osteria, M. Panasyuk, E. Parizot, A. Poroshin, P. Picozza, L. Piotrowski, Z. Plebaniak, G. Prévôt, M. Przybylak, E. Reali, M. Ricci, N. Sakaki, K. Shinozaki, G. Suino, J. Szabelski, Y. Takizawa, M. Traiche, S. Turriziani</i>	
THE GALACTIC MAGNETIC FIELD IN THE LIGHT OF STARBURST-GENERATED ULTRAHIGH-ENERGY COSMIC RAYS	1584
<i>J. Fernández Soriano, L.A. Anchordoqui, D. Torres</i>	
EVIDENCE FOR UHECR ORIGIN IN STARBURST GALAXIES	1592
<i>J. Fernández Soriano, L.A. Anchordoqui</i>	
LEGACY FROM FLY’S EYE: MAKING SENSE OF THE HIGHEST ENERGY COSMIC RAY EVER OBSERVED	1600
<i>T. Fitoussi, G. Medina-Tanco, J.C. D’Olivo</i>	
PHENOMENOLOGICAL UNCERTAINTIES IMPOSED BY OUR LOCAL MAGNETIZED NEIGHBORHOOD ON THE INTERPRETATION OF THE UHECR DIRECTIONAL DATA	1608
<i>T. Fitoussi, G. Medina-Tanco, J.C. D’Olivo</i>	
OBSERVING ULTRA-HIGH ENERGY COSMIC RAYS WITH PROTOTYPES OF FLUORESCENCE DETECTOR ARRAY OF SINGLE-PIXEL TELESCOPES (FAST) IN BOTH HEMISPHERES	1615
<i>T. Fujii, M. Malacari, J. Farmer, J. Albury, J.A. Bellido, L. Chytka, P. Hamal, P. Horvath, M. Hrabovsky, J. Kvita, D. Mandat, M. Mastrodicasa, J.N. Matthews, S. Michal, X. Ni, L. Nozka, M. Palatka, M. Pech, P. Privitera, P. Schovanek, F. Salamida, R. Smida, S.B. Thomas, P. Travnicek, M. Vacula</i>	
TOWARDS A TELESCOPE ARRAY 10 YEAR FD MONOCULAR ENERGY SPECTRUM	1623
<i>G. Furlich, D. R. Bergman</i>	
TELESCOPE ARRAY FD WEATHER CLASSIFICATION USING MACHINE LEARNING	1631
<i>G. Furlich</i>	
THE LARGE-SCALE ANISOTROPY OF COSMIC RAYS OBSERVED WITH THE PARTIAL LHAASO-KM2A ARRAY	1639
<i>W. Gao, W. Li, S. Cui, S. Chen, Z. Li, P. Zhang, C. Zhu</i>	
SOCIAL IMPACT OF OUTREACH AT THE PIERRE AUGER OBSERVATORY	1647
<i>B. García</i>	
DAQ PLATFORM BASED ON SOC-FPGA FOR HIGH RESOLUTION TIME STAMPING IN COSMIC RAY DETECTION	1655
<i>L.G. García Ordóñez, I.R. Morales Argueta, M.L. Crespo, S. Carrato, A. Cicuttin, H.D.L.T. Perez, D. Barrientos, S. Levorato, B. Valinoti, W. Florian, K. Mannatunga, M. Ballina, M. Cruz</i>	
FLUORESCENCE LIGHT DETECTION WITH THE FAMOUS TELESCOPE	1664
<i>A.L. García Vegas, T. Bretz, P. Ferreira, T. Hebbeker, J. Kemp, T. Pan, C. Peters, M. Schaufel, J. Schumacher</i>	

ELECTRIC FIELD EMITTED BY A PARTICLE TRACK IN TWO SEMI-INFINITE MEDIA.....	1672
<i>D. García-Fernández, R. Dallier, A. Escudie, L. Martin, B. Revenu</i>	
STATUS OF THE DAVIES COTTON AND SCHWARZSCHILD-COUDE MEDIUM SIZED TELESCOPES FOR THE CHERENKOV TELESCOPE ARRAY	1680
<i>J.F. Glicenstein</i>	
AIR-SHOWER RECONSTRUCTION AT THE PIERRE AUGER OBSERVATORY BASED ON DEEP LEARNING.....	1688
<i>J. Glombitza</i>	
A MUON-BASED OBSERVABLE TO DETECT PHOTONS AT ULTRA-HIGH ENERGIES.....	1696
<i>N.M. Gonzalez, F.A. Sánchez, M. Roth, A. Etchegoyen</i>	
COSMIC RAY EXTREMELY DISTRIBUTED OBSERVATORY: STATUS AND PERSPECTIVES OF A GLOBAL COSMIC RAY DETECTION FRAMEWORK	1704
<i>D. Gora, K. Almeida Cheminant, N. Dhital, P. Homola, A. R. Duffy, O. Sushchov, D. Beznosko, J. Zamora-Saa, D. E. Alvarez Castillo, N. Dhital, P. Kovacs, M. Marek, A. Mozgova, V. Nazari, M. Niedzwiecki, W. Noga, K. Smelcerz, K. Smolek, J. Stasielak, D. Ostrogorski, K. Rzecki, K.W. Wozniak</i>	
MEASUREMENTS OF INCLINED AIR SHOWERS WITH THE AUGER ENGINEERING RADIO ARRAY AT THE PIERRE AUGER OBSERVATORY	1712
<i>M. Gottowik</i>	
PROTOTYPE-MODULE OF A MUON TRACKER TO INVESTIGATE THE DENSITY DISTRIBUTION OF THE POPOCATEPETL VOLCANO LAVA DOME	1720
<i>V. Grabsky, F. Velázquez-Carreón, S. Aguilar, J. Urrutia-Fucugauchi, J. Zmeskal</i>	
THE DETECTABILITY OF WCDA TO TEV-SOURCES.....	1728
<i>Y. Guo, X. Chang, H. Hu, Z. Yao</i>	
CONSTRAINTS ON ULTRAHIGH-ENERGY COSMIC RAY MASS COMPOSITION USING COSMOGENIC NEUTRINOS	1737
<i>N. Gupta, S. Das, S. Razzaque</i>	
HYBRID SIMULATIONS OF THE RESONANT AND NON-RESONANT COSMIC RAY STREAMING INSTABILITY	1745
<i>C. Haggerty, D. Caprioli, E. Zweibel</i>	
TELESCOPE ARRAY 10 YEAR COMPOSITION	1753
<i>W. Hanlon</i>	
REAL-TIME MEASUREMENTS WITH ATMOSPHERIC INSTRUMENTS AT THE PIERRE AUGER OBSERVATORY	1761
<i>V.M. Harvey</i>	
GERMAN-RUSSIAN ASTROPARTICLE DATA LIFE CYCLE INITIATIVE.....	1769
<i>A. Haungs, I. Bychkov, J. Dubenskaya, O. Fedorov, A. Heiss, D. Kang, Y. Kazarina, E.E. Korosteleva, D. Kostunin, A. Kryukov, A. Mikhailov, M.D. Nguyen, F. Polgart, S. Polyakov, E. Postnikov, A. Shigarov, D. Shipilov, A. Streit, V. Tokareva, D. Wochele, J. Wochele, D. Zhurov</i>	
SILICON PHOTOMULTIPLIERS FOR ORBITAL ULTRA HIGH ENERGY COSMIC RAY OBSERVATION.....	1777
<i>W. Painter, A. Haungs, T. Huber, M. Karus, A. Menshikov, M. Oehler, M. Renschler, J.e. Collaboration</i>	

FINALIZED DESIGN OF LHAASO ELECTROMAGNETIC PARTICLE DETECTOR	1785
<i>C. Hou, X. Sheng, J. Liu, H. Lv, J. Zhao, X. Zhang, Z. Zhang, C. Zhu, W. Gao</i>	
PRIMARY COSMIC-RAY SPECTRA AND COMPOSITION IN THE ENERGY RANGE FROM 50 TEV TO 10^{16} EV OBSERVED WITH THE NEW TIBET HYBRID EXPERIMENT	1793
<i>J. Huang</i>	
EFFECTS OF THUNDERSTORMS ELECTRIC FIELD ON INTENSITIES OF POSITRONS, ELECTRONS AND PHOTONS AT DAOCHENG	1797
<i>B. Zhao, D. Huang, X. Zhou, K. Axi, X. Ma</i>	
THE SENSE PROJECT: DEVELOPMENTS, CHARACTERISTICS AND APPLICATION OF LOW LIGHT-LEVEL PHOTO SENSORS	1805
<i>T. Huber, T. Berghöfer, D. Della Volpe, A. Haungs, K. Henjes-Kunst, K. Link, R. Mirzoyan, T. Montaruli, A. Nagai, D. Strom</i>	
TEMPORAL SERIES ANALYSES OF COSMIC-RAY-INDUCED-NEUTRON SPECTRA MEASURED IN HIGH-ALTITUDE DURING THE LAST TWO DECADES	1813
<i>G. Hubert, S. Vernetto, A. Zanini</i>	
FOUR YEARS OF MEASUREMENTS OF THE ENERGY SPECTRUM OF COSMIC-RAY- INDUCED-NEUTRONS ON THE CONCORDIA ANTARCTIC STATION TAKING INTO ACCOUNT ENVIRONMENTAL AND SYSTEMATIC EFFECTS	1821
<i>G. Hubert, P. Ricaud</i>	
SYMMETRIZING THE SIGNAL DISTRIBUTION OF RADIO EMISSION FROM INCLINED AIR SHOWERS	1829
<i>T. Huege, F. Schlüter, L. Brenk</i>	
UNIVERSALITY AND TEMPLATE SYNTHESIS OF COSMIC RAY AIR SHOWER RADIO EMISSION	1837
<i>D. Butler, T. Huege, R. Engel, O. Scholten</i>	
THE COMPLEX EAS INSTALLATION OF THE TIEN SHAN MOUNTAIN COSMIC RAY STATION	1845
<i>B. Iskakov, T. Yernar, S. Turlan, K. Maral, T. Kalamkyz</i>	
FEATURES OF MULTI-PARTICLE PROCESSES ON LIGHT NUCLEI IN TARGET EXPERIMENTS	1851
<i>B. Iskakov, A.K. Argynova, A.D. Beisenova, T.N. Kvochkina, A.A. Loctionov, Y.M. Tautayev, T.K. Sadykov</i>	
ENERGY SPECTRUM MEASURED BY THE TELESCOPE ARRAY	1857
<i>D. Ivanov</i>	
DIGITAL PROCESSING OF CHERENKOV LIGHT SIGNALS FROM EXTENSIVE AIR SHOWERS OF COSMIC RAYS	1865
<i>A. Ivanov, S. Matarkin, L. Timofeev</i>	
ENERGY GENERATION RATE DENSITIES OF ULTRAHIGH-ENERGY COSMIC-RAY NUCLEI	1874
<i>Y. Jiang, B.T. Zhang, K. Murase</i>	
STUDY COSMIC RAY MASS COMPOSITION USING DEEP LEARNING IN TELESCOPE ARRAY SURFACE ARRAY DETECTOR	1882
<i>O. Kalashev, M. Kuznetsov</i>	

PROJECT APEIRO - HIGH-ALTITUDE BALLOON PAYLOAD FOR MEASURING COSMIC RAY FLUX	1889
<i>S. Deshpande, L. Kapoor, S. Kamat, D. Pal, S. Bheesette</i>	
LATEST RESULTS FROM THE KASCADE-GRANDE DATA ANALYSIS.....	1897
<i>D. Kang, A. Haungs, W.D. Apel, J.C. Arteaga-Velázquez, K. Bekk, M. Bertaina, J. Blümer, H. Bozdog, E. Cantoni, A. Chiavassa, F. Cossavella, K. Daumiller, V. de Souza, P. Doll, F.D. Pierro, R. Engel, D. Fuhrmann, A. Gherghel-Lascu, H.J. Gils, R. Glasstetter, C. Grupen, D. Heck, J.R. Hörandel, T. Huege, K.H. Kampert, H.O. Klages, K. Link, P. Łuczak, H.J. Mathes, H.J. Mayer, J. Milke, C. Morello, J. Oehlschläger, S. Ostapchenko, T. Pierog, H. Rebel, D. Rivera-Rangel, M. Roth, H. Schieler, S. Schoo, F.G. Schröder, O. Sima, G. Toma, G.C. Trinchero, H. Ulrich, A. Weindl, J. Wochele, J. Zabierowski</i>	
STUDY ON MEASUREMENT METHOD OF RADIO WAVES GENERATED BY CHARGED PARTICLES IN COSMIC-RAY AIRSHOWERS USING A PARTICLE ACCELERATOR.....	1905
<i>Y. Katayose, T. Asaba, K. Honda, S. Kodaira, Y. Koshiha, K. Sakaue, T. Saito, T. Sasaki, K. Takasaki, K. Yagisawa, M. Wakamatsu</i>	
PS1-184: A SET OF CR DETECTORS INSTALLED AT SYOWASTATION, IN THE ANTARCTIC, FOR SPACE WEATHER STUDY	1912
<i>C. Kato, K. Munakata, S. Uchida, S. Kaimi, A. Kadokura, R. Kataoka, P. Evenson</i>	
THE SCINTILLATOR UPGRADE OF ICETOP: PERFORMANCE OF THE PROTOTYPE ARRAY.....	1916
<i>M. Kauer, T. Huber, D. Tosi, C. Wendt</i>	
UPDATED RESULTS ON THE UHECR HOTSPOT OBSERVED BY THE TELESCOPE ARRAY EXPERIMENT.....	1924
<i>K. Kawata, A. di Matteo, T. Fujii, D. Ikeda, D. Ivanov, C. C. H. Jui, E. Kido, J.P. Lundquist, J. N. Matthews, S. Nagataki, T. Nonaka, S. Ogio, T. Okuda, G. Rubtsov, H. Sagawa, T.K. Sako, N. Sakurai, M. Takeda, R. Takeishi, A. Taketa, G. B. Thomson, P. Tinyakov, I. Tkachev, S. Troitsky</i>	
AIR SHOWER MEASUREMENT WITH A SIPM BASED SCINTILLATOR DETECTOR	1929
<i>J. Kemp, T. Bretz, T. Hebbeker, L. Middendorf, C. Peters, J. Schumacher</i>	
STATUS AND PROSPECTS OF THE TAX4 EXPERIMENT	1937
<i>E. Kido</i>	
IMPLICATIONS OF THE COSMIC RAY SPECTRUM FROM THE SECOND KNEE TO THE ANKLE REGION OBSERVED BY THE TA AND TALE EXPERIMENT FOR THE COSMIC RAY PROTON SOURCES.....	1943
<i>E. Kido</i>	
THE COSMIC RAY ENERGY SPECTRUM ABOVE 2 PEV MEASURED BY THE TALE FLUORESCENCE TELESCOPES.....	1951
<i>J. Kim</i>	
PROPAGATION OF ULTRA-HIGH-ENERGY COSMIC RAYS IN THE MAGNETIZED COSMIC WEB.....	1958
<i>J. Kim, D. Ryu, S. Roh, J. Ha, H. Kang</i>	
LOW ENERGY COSMIC RAY SPECTRUM FROM 250 TEV TO 10 PEV USING ICETOP.....	1964
<i>R. Koirala, T. Gaisser</i>	

SEVEN YEARS OF TUNKA-REX OPERATION	1972
<i>D. Kostunin, P.A. Bezyazeekov, N. Budnev, O. Fedorov, O.A. Gress, O. Grishin, A. Haungs, T. Huege, Y. Kazarina, M. Kleifges, E.E. Korosteleva, L.A. Kuzmichev, V. Lenok, N. Lubsandorzhiev, S. Malakhov, T. Marshalkina, R. Monkhoev, E. Osipova, A. Pakhorukov, L. Pankov, V.V. Prosin, F.G. Schröder, D. Shipilov, A. Zagorodnikov</i>	
QUEST FOR DETECTION OF A COSMOLOGICAL SIGNAL FROM NEUTRAL HYDROGEN WITH A DIGITAL RADIO ARRAY DEVELOPED FOR AIR-SHOWER MEASUREMENTS.....	1980
<i>D. Kostunin, P.A. Bezyazeekov, N. Budnev, O. Grishin, O. Fedorov, Y. Kazarina, L.A. Kuzmichev, S. Malakhov, T. Marshalkina, V. Oreshko, M. Pshirkov, G. Rubtsov, A. Sokolov, A. Zagorodnikov, D. Zhurov</i>	
CHERENKOV LIGHT FROM HORIZONTAL AIR SHOWER	1988
<i>K. Krolik, A. Djakonow, Z. Plebaniak, M. Przybylak, J. Szabelski, L. Wiencke</i>	
DEVELOPMENT OF A WATER CERENKOV DETECTOR PROTOTYPE WITH WAVELENGTH SHIFTERS AND SILICON PHOTOMULTIPLIER READOUT.....	1995
<i>A. Kryemadhi, B. Weindorf, A. Kendall, T. Luu, H. Hawbecker</i>	
SEARCH OF THE PAIRED EVENTS IN COSMIC RAYS WITH ENERGY ABOVE 5 EEV IN YAKUTSK EAS ARRAY DATA	2000
<i>S. Knurenko, L. Ksenofontov</i>	
UV LASER SYSTEM TEST OF MINI-EUSO.....	2004
<i>V. Kungel, M.E. Bertaina, F. Bisconti, M. Casolino, J. Eser, L. Wiencke</i>	
TELESCOPE ARRAY SEARCH FOR EEV PHOTONS	2012
<i>M. Kuznetsov, O. Kalashev, G. Rubtsov</i>	
TESTING LORENTZ INVARIANCE VIOLATION AT THE PIERRE AUGER OBSERVATORY	2020
<i>R.G. Lang</i>	
COMPETITIVE SUBLUMINAL LIV LIMITS FROM ULTRA-HIGHENERGY ASTROPHYSICS	2028
<i>R.G. Lang, H. Martínez-Huerta, V. de Souza</i>	
BGO TRACK RECONSTRUCTION WITH DAMPE	2036
<i>S. Lei, W. Jiang</i>	
THE EXTRAGALACTIC COSMIC-RAY PROPAGATOR (EGCRPROP)	2043
<i>M.A. Leigui de Oliveira, R.P. Costa Jr.</i>	
MODELING THE APERTURE OF RADIO INSTRUMENTS FOR AIR-SHOWER DETECTION	2051
<i>V. Lenok, P. Bezyazeekov, N. Budnev, O. Fedorov, O. Gress, O. Grishin, A. Haungs, T. Huege, Y. Kazarina, M. Kleifges, E. Korosteleva, D. Kostunin, L. Kuzmichev, N. Lubsandorzhiev, S. Malakhov, T. Marshalkina, R. Monkhoev, E. Osipova, A. Pakhorukov, L. Pankov, V. Prosin, F.G. Schröder, D. Shipilov, A. Zagorodnikov</i>	
SIMULATION AND RECONSTRUCTION STUDY OF A FUTURE SURFACE SCINTILLATOR ARRAY AT THE ICECUBE NEUTRINO OBSERVATORY	2059
<i>A. Leszczyńska, M. Plum</i>	
COMPARISON OF MEASURED AND SIMULATED DATA WITH LHAASO-WCDA RUN DATA.....	2067
<i>H. Li, M. Zha, H. Wu, Z. Yao, Y. Guo</i>	

SIMULATION AND REAL DATA ANALYSIS OF THE LHAASO-WCDA DYNAMIC RANGE EXTENSION SYSTEM	2075
<i>X. Li, C. Liu, Z. Zeng, X. Chang, M. Zha, Z. Yao, H. Wu, H. He, Z. Cao, H. Hu</i>	
CHEMISTRY OF ION INJECTION IN SNR SHOCKS: HYBRID SIMULATIONS IN THE LIGHT OF HE/C/O DATA FROM AMS-02.....	2083
<i>A. Hanusch, T. Liseykina, M. Malkov</i>	
ELECTRON INJECTION INTO FERMI ACCELERATION IN QUASIPARALLEL COLLISIONLESS SHOCKS: COMBINING HYBRID SIMULATIONS WITH TEST PARTICLE ACCELERATION	2091
<i>A. Hanusch, T. Liseykina, M. Malkov</i>	
SPOT-LIKE PROTON ACCELERATION IN SNR SHOCKS: IMPLICATIONS FOR THE ENERGY SPECTRA	2098
<i>T. Liseykina, A. Hanusch, M. Malkov, F. Aharonian</i>	

VOLUME 4

THE STUDY ON THE LHAASO-WCDA TIME CALIBRATION	2106
<i>J. Liu, B. Gao, M. Zha, Z. Yao, X. Wang</i>	
AN UNDISCOVERED PULSAR IN THE LOCAL BUBBLE AS AN EXPLANATION OF THE LOCAL HIGH ENERGY COSMIC RAY ALL-ELECTRON SPECTRUM	2114
<i>R. Lopez-Coto, D. Parsons, J. Hinton, G. Giacinti</i>	
SUPERGALACTIC STRUCTURE OF ENERGY-ANGLE CORRELATIONS	2116
<i>J.P. Lundquist, P. Sokolsky</i>	
OFFLINE CALIBRATION AND MONITORING OF ELECTROMAGNETIC PARTICLE DETECTORS IN LHAASO.....	2124
<i>H. Lv, Y. Nan, X. Sheng, X. Zhang, S. Chen, Z. Li, Z. Wang</i>	
EAS THERMAL NEUTRON DETECTOR ARRAY TO ADD INTO LHAASO	2132
<i>X. Ma, J. He, Y. Zhang, Y. Feng, Y. Guo, H. Hu, C. Liu, S.W. Cui, B.B. Li, S. Liu, C. Shi, Y. Liu, V. Alekseenko, K. Levochkin, V. Rulev, O.B. Shchegolev, Y. Stenkin, V. Stepanov, Y.V. Yanin, C. Dong, R. Zhou, T.L. Chen, D. Luobu, Q. Gao, M.Y. Liu</i>	
GEOMETRY AND OPTICS CALIBRATION OF LHAASO-WFCTA USING STAR LIGHT	2140
<i>L. Ma, Z. Shoushan, Y. Zhiyong</i>	
TIME STRUCTURE ANALYSIS OF EXTENSIVE AIR SHOWERS USING THE TELESCOPE ARRAY DATA.....	2148
<i>R. Mayta Palacios, Y. Tsunesada, S. Ogio</i>	
ESPRESSO ACCELERATION OF ULTRA-HIGH-ENERGY COSMIC RAYS UP TO THE HILLAS LIMIT IN RELATIVISTIC MHD JETS.....	2156
<i>R. Mbarek, D. Caprioli</i>	
THE RESULTS AND FUTURE PROSPECTS OF THE LHCF EXPERIMENT	2164
<i>H. Menjo, O. Adriani, E. Berti, L. Bonechi, M. Bongì, G. Castellini, R. D'Alessandro, M. Haguenaue, Y. Itow, K. Kasahara, Y. Matsubara, Y. Muraki, K. Ohashi, P. Papini, S. Ricciarini, T. Sako, N. Sakurai, K. Sato, Y. Shimizu, T. Tamura, A. Tiberio, S. Torii, A. Tricomi, B. Turner, M. Ueno, K. Yoshida</i>	

COSMIC-RAY TRANSPORT BETWEEN THE KNEE AND THE ANKLE WITH CRPROPA	2172
<i>L. Merten, J. Tjus, C. Bustard, E. Zweibel</i>	
USING IACTS TO MEASURE THE PROFILES OF MUONS IN TEV AIR SHOWERS	2180
<i>A.M.W. Mitchell, H.P. Dembinski, R.D. Parsons</i>	
RECONSTRUCTING AIR SHOWERS WITH LOFAR USING EVENT SPECIFIC GDAS ATMOSPHERES	2188
<i>P. Mitra, A. Bonardi, A. Corstanje, S. Buitink, G.K. Krampah, H. Falcke, B.M. Hare, J.R. Hörandel, T. Huege, K. Mulrey, A. Nelles, H. Pandya, J.P. Rachen, L. Rossetto, O. Scholten, S. ter Veen, T.N.G. Trinh, T. Winchen</i>	
RECONSTRUCTION OF VERTICAL EVENTS RECORDED BY THE SURFACE DETECTOR OF THE PIERRE AUGER OBSERVATORY	2196
<i>D. Mockler</i>	
OBSERVATION OF COSMIC RAY ANISOTROPY WITH GRAPES-3 EXPERIMENT	2204
<i>P. Mohanty, S. Ahmad, M. Chakraborty, A. Chandra, S.R. Dugad, S.K. Gupta, B. Hariharan, Y. Hayashi, P. Jagadeesan, A. Jain, P. Jain, V.B. Jhansi, S. Kawakami, H. Kojima, S. Mahapatra, S.D. Morris, P.K. Nayak, A. Oshima, D. Pattanaik, P.S. Rakshe, K. Ramesh, B.S. Rao, L.V. Reddy, S. Shibata, F. Warsi, M. Zuberi</i>	
DIFFERENTIAL CHERENKOV DETECTORS: EXPERIMENTAL TECHNIQUE AND RESULTS	2209
<i>V. Mokhnachevskaya, Y.A. Egorov, S.P. Knurenko, A.V. Sabourov, I.Y. Sleptsov, Z.E. Petrov</i>	
PERFORMANCE OF THE WATER CHERENKOV DETECTOR LAGO-CHIAPAS, MEXICO	2215
<i>O.G. Morales Olivares, H. de León Hidalgo, K.S. Caballero Mora, R. Arceo Reyes, E. Moreno Barbosa, A. Zepeda Domínguez, C. Álvarez Ochoa, F. Hueyotl Zahuantitla, L.R. Pérez Sánchez, E. Santos</i>	
THE LATERAL DISTRIBUTION FUNCTION OF COSMIC-RAY INDUCED AIR SHOWERS STUDIED WITH THE HAWC OBSERVATORY	2221
<i>J.A. Morales-Soto, J.C. Arteaga-Velázquez, J.d.D. Álvarez-Romero</i>	
EFFECTS OF CHARM PARTICLES IN EXTENSIVE AIR SHOWERS	2229
<i>M.A. Muller, V.P. Gonçalves</i>	
THE ENERGY SCALE OF COSMIC RAYS DETECTED WITH LOFAR	2237
<i>K. Mulrey, A. Bonardi, S. Buitink, A. Corstanje, H. Falcke, B.M. Hare, J. Hörandel, T. Huege, G. Krampah, P. Mitra, A. Nelles, H. Pandya, J.P. Rachen, L. Rossetto, O. Scholten, S. ter Veen, T.N.G. Trinh, T. Winchen</i>	
EXTENSION OF THE LOFAR RADBOUD AIR SHOWER ARRAY	2245
<i>K. Mulrey, A. Bonardi, S. Buitink, A. Corstanje, H. Falcke, B.M. Hare, J. Hörandel, T. Huege, G. Krampah, P. Mitra, A. Nelles, H. Pandya, J.P. Rachen, L. Rossetto, O. Scholten, S. ter Veen, T.N.G. Trinh, D. Veberic, T. Winchen</i>	
CONSTRAINTS ON UHECR SOURCES AND THEIR ENVIRONMENTS, FROM FITTING UHECR SPECTRUM AND COMPOSITION, AND NEUTRINOS AND GAMMAS.	2253
<i>M.S. Muzio, M. Unger, G.R. Farrar</i>	
THE ANISOTROPY OF COSMIC RAYS OBSERVED BY THE TIBET AIR SHOWER ARRAY AND MUON DETECTOR ARRAY.	2256
<i>Y. Nakamura</i>	

COSMIC-RAY DETECTION WITH AND NOVEL RECONSTRUCTION ALGORITHMS FOR THE ARIANNA EXPERIMENT	2259
<i>A. Nelles</i>	
RECOGNITION AND CLASSIFICATION OF THE COSMIC-RAY EVENTS IN IMAGES CAPTURED BY CMOS/CCD CAMERAS	2267
<i>M. Niedźwiecki, K. Rzecki, M. Marek, P. Homola, K. Smelcerz, D.A. Castillo, K. Smolek, B. Hnatyk, J. Zamora-Saa, A. Mozgova, V. Nazari, D. Gora, K. Kopanski, T. Wibig, A.R. Duffy, J. Stasielak, Z. Zimborás, M. Kasztelan</i>	
ELECTRON ACCELERATION AT RIPPLED LOW MACH NUMBER SHOCKS IN MERGING GALAXY CLUSTERS	2275
<i>J. Niemiec, O. Kobzar, T. Amano, M. Hoshino, S. Matsukiyo, Y. Matsumoto, M. Pohl</i>	
PROBING THE ANOMALOUS FLUX OF VERY-HIGH-ENERGY GAMMA RAYS FROM THE SUN WITH HAWC	2283
<i>M. Nisa</i>	
NEW ELECTRONICS FOR THE SURFACE DETECTORS OF THE PIERRE AUGER OBSERVATORY	2291
<i>D.F. Nitz</i>	
FIRST RESULTS FROM POLARQUEEEST	2299
<i>C. Pellegrino, F. Noferini, M. Abbrescia, C. Avanzini, L. Baldini, R. Baldini Ferroli, L.G. Batignani, M. Battaglieri, S. Boi, E. Bossini, F. Carnesecchi, D. Cavazza, C. Cicalò, L. Cifarelli, F. Coccetti, E. Coccia, A. Corvaglia, D. De Gruttola, S. De Pasquale, L. Fabbri, D. Falchieri, L. Galante, P. Galeotti, M. Garbini, G. Gemme, I. Gnesi, S. Grazzi, D. Hatzifotiadou, P. La Rocca, Z. Liu, G. Mandaglio, G. Maron, M.N. Mazziotta, S. Meneghini, A. Mulliri, R. Nania, F. Nozzoli, F. Palmonari, M. Panareo, M.P. Panetta, R. Paoletti, L. Perasso, O. Pinazza, C. Pinto, G. Piragino, S. Pisano, F. Riggi, G.C. Righini, C. Ripoli, M. Rizzi, G. Sartorelli, E. Scapparone, M. Schioppa, A. Scribano, M. Selvi, G. Serri, S. Squarcia, M. Taiuti, G. Terreni, R. Travaglini, A. Trifirò, M. Trimarchi, M.C. Vistoli, L. Votano, M.C.S. Williams, A. Zichichi, R. Zuyewski</i>	
LONG DISTANCE NETWORK LINK FOR TAX4 EXPANSION	2309
<i>T. Nonaka, R. Cady, R. Fujiwara, E. Kido, J. Matthews, S. Ogio, T. Okuda, H. Sagawaa, N. Sakaki, S. Thomas, K. Yada</i>	
MEASUREMENT OF THE SPECTRUM OF COSMIC RAYS ABOVE $10^{16.5}$ EV WITH CHERENKOV-DOMINATED EVENTS AT THE PIERRE AUGER OBSERVATORY	2317
<i>V. Novotny</i>	
TELESCOPE ARRAY LOW ENERGY EXTENSION(TALE) HYBRID	2325
<i>S. Ogio</i>	
A SIMULATION STUDY FOR THE EFFECT OF DIFFRACTIVE COLLISIONS ON THE AIR SHOWER DEVELOPMENTS	2333
<i>K. Ohashi, H. Menjo, Y. Itow, T. Sako, K. Kasahara</i>	
IMPROVEMENT OF COSMIC-RAY MUOGRAPHY FOR EARTH SCIENCES AND CIVIL ENGINEERING	2341
<i>L. Olah, H. Tanaka, G. Hamar, D. Varga</i>	

THE POEMMA (PROBE OF EXTREME MULTI-MESSENGERASTROPHYSICS) MISSION	2349
<i>A.V. Olinto, J. Adams, R. Aloisio, L. Anchordoqui, D. Bergman, M. Bertaina, P. Bertone, F. Bisconti, M. Bustamante, M. Casolino, A. Cummings, M. Christl, I. DeMitri, R. Diesing, J. Eser, F. Fenu, C. Guepin, E. Hays, E. Judd, J. Krizmanic, E. Kuznetsov, A. Liberatore, S. Mackovjak, J. McEnery, J.W. Mitchell, A. Neronov, F. Oikonomou, A. Otte, E. Parizot, T. Paul, J. Perkins, G. Prevôt, P. Reardon, M. Reno, M. Ricci, F. Sarazin, K. Shinozaki, J. Soriano, F. Stecker, Y. Takizawa, R. Ulrich, M. Unger, T. Venters, L.R. Wiencke, R.D. Young</i>	
NICHE DETECTOR AND OPERATIONS.....	2357
<i>Y. Omura, K. Nakai, Y. Tsunesada, D. R Bergman, J. F Krizmanic</i>	
PRODUCTION AND QUALITY CONTROL OF THE SCINTILLATOR SURFACE DETECTOR FOR THE AUGERPRIME UPGRADE OF THE PIERRE AUGER OBSERVATORY	2364
<i>J. Pękala</i>	
CALIBRATION AND FIRST MEASUREMENTS OF MUTE: A HYBRID MUON TELESCOPE FOR GEOLOGICAL STRUCTURES	2372
<i>J. Peña Rodríguez, A. Vásquez-Ramírez, J. Sanabria-Gómez, L. Nunez, D. Sierra-Porta, H. Asorey</i>	
COSMIC RAY TRANSPORT IN STARBURST GALAXIES AND POSSIBLE OBSERVABLES	2381
<i>E. Peretti, G. Morlino, P. Blasi, F. Aharonian</i>	
RESULTS OF GAMMA RAY AND NEUTRINO SEARCH BY YAKUTSK ARRAY COMPLEX DATA.....	2389
<i>I. Petrov, S. Knurenko</i>	
SECOND KNEE IN COSMIC RAY SPECTRUM AT ENERGY $\sim 10^{17}$ EV BY YAKUTSK DATA	2397
<i>S. Knurenko, I. Petrov</i>	
RESULTS OF ULTRA-HIGH ENERGY COSMIC RAY STUDY BY RADIO TECHNIQUE AT YAKUTSK ARRAY	2404
<i>I. Petrov, S. Knurenko</i>	
COLLECTIVE HADRONIZATION AND AIR SHOWERS: CAN LHC DATA SOLVE THE MUON PUZZLE ?	2411
<i>T. Pierog, S. Baur, H.P. Dembinski, R. Ulrich, K. Werner</i>	
RESULTS AND STATUS OF THE EUSO-TA DETECTOR.....	2419
<i>L. Piotrowski</i>	
THE EXTREME ENERGY EVENTS EXPERIMENT	2427
<i>C. Cicalo, M. Abbrescia, C. Avanzini, L. Baldini, R. Baldini Ferroli, L.G. Batignani, M. Battaglieri, S. Boi, E. Bossini, F. Carnesecchi, L. Cifarelli, F. Coccetti, E. Coccia, A. Corvaglia, D. De Gruttola, S. De Pasquale, L. Fabbri, L. Galante, P. Galeotti, M. Garbini, G. Gemme, I. Gnesi, S. Grazzi, D. Hatzifotiadou, P. La Rocca, Z. Liu, G. Mandaglio, G. Maron, M.N. Mazziotta, A. Mulliri, R. Nania, F. Noferini, F. Nozzoli, F. Palmonari, M. Panareo, M.P. Panetta, R. Paoletti, C. Pellegrino, L. Perasso, C. Pinto, G. Piragino, S. Pisano, F. Riggi, G.C. Righini, C. Ripoli, M. Rizzi, G. Sartorelli, E. Scapparone, M. Schioppa, A. Scribano, M. Selvi, G. Serri, S. Squarcia, M. Taiuti, G. Terreni, A. Trifirò, M. Trimarchi, M.C. Vistoli, L. Votano, M.C.S. Williams, A. Zichichi, R. Zuyewski</i>	
PARTICLE IDENTIFICATION IN SMARTPHONE CAMERA IMAGES USING THE DISTRIBUTED ELECTRONIC COSMIC-RAY OBSERVATORY	2435
<i>J. Vandenbroucke, M. Meehan, J. Peacock, J. Bourbeau, F. Campos, C. Schneider, M. Winter, A. Pizzuto, R. Morgan, B. Gallay, A.L. Simons</i>	

UPGRADING THE OVRO-LWA FOR IMPROVED COSMIC RAY DETECTION CAPABILITIES	2443
<i>K. Plant, G. Hallinan, A. Romero-Wolf, R. Monroe, J. Kocz, A. Nelles, M. Anderson, M. Eastwood, L. D'Addario, D. Woody, J. Lamb, W. Carvalho, K. Belov</i>	
INTERPRETATION OF UHECR COMPOSITION BASED ON CONEX SIMULATIONS WITH REVISED INELASTIC CROSS SECTIONS.	2451
<i>Z. Plebaniak, T. Wibig</i>	
CALIBRATION OF THE EUSO-TA DETECTOR WITH STARS.....	2458
<i>Z. Plebaniak, J. Szabelski, M. Przybylak, L.W. Piotrowski, A. Djakonow, K. Królik</i>	
COSMIC RAY COMPOSITION STUDY USING MACHINE LEARNING AT THE ICECUBE NEUTRINO OBSERVATORY	2466
<i>M. Plum</i>	
A LARGE RADIO DETECTOR AT THE PIERRE AUGER OBSERVATORY - MEASURING THE PROPERTIES OF COSMIC RAYS UP TO THE HIGHEST ENERGIES.....	2474
<i>B. Pont</i>	
A PARAMETERIZED CATALOG OF RADIO GALAXIES ASULTRA-HIGH ENERGY COSMIC RAY SOURCES	2482
<i>J.P. Rachen, B. Eichmann</i>	
ORIGIN OF ULTRA-HIGH ENERGY COSMIC RAYS:THE COSMOLOGICAL MANIFESTO	2490
<i>J.P. Rachen</i>	
LIMITS ON ULTRA-HIGH ENERGY PHOTONS WITH THE PIERRE AUGER OBSERVATORY	2498
<i>J. Rautenberg</i>	
FIRST RESULTS OF THE CORSIKA 8 AIR SHOWER SIMULATION FRAMEWORK.....	2506
<i>D. Melo, M. Reininghaus, F. Riehn, R. Ulrich</i>	
DETECTION AND RESOLUTION OF TERRESTRIAL GAMMA FLASHES AT TELESCOPE ARRAY	2514
<i>J. Remington, R. Abbasi, J. Belz, P. Krehbiel, R. Le Von, W. Rison, D. Rodeheffer, M. Stanley</i>	
FIRST MEASUREMENTS WITH PROTOTYPE RADIO ANTENNAS FOR THE ICETOP DETECTOR ARRAY	2517
<i>M. Renschler</i>	
OBSERVATION OF ELECTRON RINGS WITH IMAGING AIR CHERENKOV TELESCOPES.....	2525
<i>H. Retnakaran, M. Tluczykont, D. Horns</i>	
MEASUREMENT OF THE FLUCTUATIONS IN THE NUMBER OF MUONS IN INCLINED AIR SHOWERS WITH THE PIERRE AUGER OBSERVATORY	2534
<i>F. Riehn</i>	
RADIO DETECTION OF COSMIC-RAY AIR SHOWERS WITH THE OVRO-LWA: STATUS AND FUTURE PLANS.	2542
<i>A. Romero-Wolf, R. Monroe, G. Hallinan, W. Carvalho, K. Plant, K. Belov, A. Nelles, M. Eastwood, M. Anderson, L. D'Addario, J. Kocz, D. Woody</i>	
CALIBRATION AND OPERATION OF AN AUTONOMOUS WATER CHERENKOV DETECTOR USING RED PITAYA IN QUITO	2550
<i>C. Rosero, J. Cando, N. Vásquez, A. Carabalí, D. Erazo</i>	

LARGE-SCALE ANISOTROPIES ABOVE 0.03 EEV MEASURED BY THE PIERRE AUGER OBSERVATORY	2558
<i>E. Roulet</i>	
THE TUS SPACE PHOTODETECTOR RELATIVE CALIBRATION IN FLIGHT	2566
<i>Y. Sagan, M. Lavrova, A. Grinuyk, A. Tkachenko, L. Tkachev</i>	
THE MUON COMPONENT OF EXTENSIVE AIR SHOWERS ABOVE $10^{17.5}$ EV MEASURED WITH THE PIERRE AUGER OBSERVATORY	2574
<i>F.A. Sánchez</i>	
MODELING THE LAGO'S DETECTORS RESPONSE TO SECONDARY PARTICLES AT GROUND LEVEL FROM THE ANTARCTIC TO MEXICO	2582
<i>C. Sarmiento-cano, M. Suárez-Durán, A. Vásquez-Ramírez, A. Jaimes-Motta, R. Calderón-Ardila, J. Peña-Rodríguez</i>	
THE ENERGY SPECTRUM OF FORWARD PHOTONS MEASURED BY THE RHICF EXPERIMENT IN $\sqrt{s} = 510$ GEV PROTON-PROTON COLLISIONS	2591
<i>K. Sato, Y. Itow, H. Menjo, M. Ueno, K. Ohashi, T. Sako, Y. Goto, I. Nakagawa, R. Saidl, J. Park, M. Kim, B. Hong, K. Tanida, S. Torii, K. Kasahara, N. Sakurai, O. Adriani, R. D'Alessandro, L. Bonechi, E. Berti, A. Tricomi</i>	
SEARCHING FOR UHE PHOTONS IN THE EEV RANGE: A TWO-VARIABLE APPROACH EXPLOITING AIR-SHOWER UNIVERSALITY	2599
<i>P. Savina, C. Bleve, L. Perrone</i>	
FOLLOW-UP SEARCHES FOR ULTRA-HIGH ENERGY NEUTRINOS FROM TRANSIENT ASTROPHYSICAL SOURCES WITH THE PIERRE AUGER OBSERVATORY	2607
<i>M. Schimp</i>	
INFLUENCE OF ATMOSPHERIC ELECTRIC FIELDS ON RADIO EMISSION FROM AIR SHOWERS	2615
<i>O. Scholten, G. Trinh, U. Ebert</i>	
DIFFERENCES BETWEEN HIGH ENERGY HADRONIC INTERACTION MODELS FOR AIR SHOWER MEASUREMENTS IN THE 100 GEV-100 TEV RANGE	2623
<i>H. Schoorlemmer, Á. Pastor, R.D. Parsons</i>	
SCIENCE CASE OF A SCINTILLATOR AND RADIO SURFACE ARRAY AT ICECUBE	2626
<i>F. Schroeder</i>	
COSMIC@WEB - ASTROPARTICLE LEARNING PLATFORM FOR STUDENTS	2634
<i>S. Garrappa, F. Bradascio, M. Goldack, C. Schwerdt, J. Stachurska, R. Stein, M. Walter</i>	
THE DATA PROCESSOR OF THE EUSO-SPB2 TELESCOPES	2641
<i>V. Scotti, G. Osteria, F. Perfetto</i>	
ON MEASURING THE COSMIC-RAY PRODUCTION RATE IN SUPERNOVA REMNANT SHOCKS BY POLARIZED BALMER LINE EMISSION	2648
<i>J. Shimoda, Y. Ohira, R. Yamazaki, J.M. Laming, S. Katsuda</i>	
STUDY OF THE ANGULAR SPECTRA OF GAMMA AND HADRON FAMILIES IN THE HADRON EXPERIMENT	2655
<i>S. Shinbulatov, N.O. Saduev, O.A. Kalikulov, Y.S. Mukhamejanov, S. Utey, N.O. Yerezhep, D. Beznosko, J.K. Jhanceitova, L.I. Vildanova, V.V. Zhukov, K.V. Cherdyntceva, V.G. Denisova, E. Kanevskay, N.M. Nesterova, V.S. Puchkov, S.E. Pyatovsky, V.A. Ryabov, A.L. Schepetov, M.D. Smirnova, S.B. Shaulov, A.I. Zhumabayev, R.A. Nam, V.V. Piskal, A.V. Stepanov</i>	

TRIGGER DEVELOPMENTS FOR THE FLUORESCENCE DETECTOR OF EUSO-TA AND EUSO-SPB2	2662
<i>M. Battisti, M.E. Bertaina, F. Fenu, H. Miyamoto, K. Shinozaki, A. Belov, F. Bisconti, M. Mignone, F. Capel</i>	
ESTIMATION OF THE EXPOSURE FOR THE AIR SHOWER DETECTION MODE OF EUSO-SPB1	2670
<i>K. Shinozaki, M. Bertaina, F. Bisconti, F. Fenu, S. Ferrarese, S. Monte, A. Anzalone, A. Bruno, S. Briz, A. Diaz, J. Eser, L.R. Wiencke, A. Olinto, M. Vrabel</i>	
A COMMUNICATION SOLUTION FOR PORTABLE DETECTORS OF THE "COSMIC RAY EXTREMELY DISTRIBUTED OBSERVATORY"	2678
<i>K. Smelcerz, K. Kopanski, W. Noga, M. Sulek, N. Dhital, K. Almeida-Cheminant, D. Gora, P. Homola, O. Suschov, D. Beznosko, J. Zamora-Saa, A.R. Duffy, M. Kasztelan, P. Kovacs, V. Nazari, M. Niedźwiecki, K. Rzecki, K. Smolek, J. Stasielak, Z. Zimborás</i>	
THE EFFECT OF IMPROVED HIGH-ENERGY MUON CROSS-SECTIONS	2686
<i>J. Soedingrekso, A. Sandrock, W. Rhode</i>	
COSMIC RAY MASS COMPOSITION ANALYSIS METHOD TO BE USED IN THE LHAASO-ENDA EXPERIMENT	2694
<i>X. Ma, O.B. Shchegolev, Y. Stenkin</i>	
ANALYSIS OF DATA FROM SURFACE DETECTOR STATIONS OF THE AUGERPRIME UPGRADE	2700
<i>A. Taboada</i>	
THE STATUS AND PERFORMANCE OF COSMIC RAY AIR FLUORESCENCE FRESNEL LENS TELESCOPE (CRAFT) FOR THE NEXT GENERATION UHECR OBSERVATORY	2708
<i>Y. Tameda, T. Tomida, D. Ikeda, K. Yamazaki, M. Yamamoto, H. Iwakura, Y. Nakamura, Y. Kaino</i>	
THE EFFECTS OF THE GALACTIC MAGNETIC FIELD ON UHECR FROM LOCAL SOURCES	2717
<i>A.M. Taylor, M. Hillas</i>	
STUDYING THE TEMPORAL VARIATION OF THE COSMIC-RAY SUN SHADOW USING ICECUBE DATA	2724
<i>F. Tenholt, J. Becker Tjus, P. Desiati</i>	
FULL-SKY SEARCHES FOR ANISOTROPIES IN UHECR ARRIVAL DIRECTIONS WITH THE PIERRE AUGER OBSERVATORY AND THE TELESCOPE ARRAY	2732
<i>A. di Matteo, T. Bister, J. Biteau, L. Caccianiga, O. Deligny, T. Fujii, D. Harari, D. Ivanov, K. Kawata, J.P. Lundquist, R. Menezes de Almeida, D. Mockler, T. Nonaka, H. Sagawa, P. Tinyakov, I. Tkachev, S. Troitsky</i>	
ESTIMATING THE DEPTH OF SHOWER MAXIMUM USING THE SURFACE DETECTORS OF THE PIERRE AUGER OBSERVATORY	2739
<i>C.J. Todero Peixoto</i>	
GEOMETRY CALIBRATION FOR FLUORESCENCE DETECTORS OF TELESCOPE ARRAY USING A STANDARD LIGHT SOURCE MOUNTED ON UAV	2747
<i>T. Tomida, K. Sano, Y. Oku, Y. Tameda, T. Inadomi, A. Nakazawa, D. Ikeda</i>	
PARTICLE-IN-CELL SIMULATIONS OF RELATIVISTIC WEIBEL-MEDIATED SHOCKS PROPAGATING INTO INHOMOGENEOUS MEDIA	2755
<i>S. Tomita, Y. Ohira</i>	

ICETOP AS VETO FOR ICECUBE: RESULTS	2761
<i>D. Tosi, H. Pandya</i>	
NEW RESULTS FROM THE COSMIC-RAY PROGRAM OF THE NA61/SHINE FACILITY AT THE CERN SPS	2769
<i>M. Unger</i>	
TARGETING EARTH: CRPROPA LEARNS TO AIM	2771
<i>J. Jasche, A. van Vliet, J.P. Rachen</i>	
ENERGY SPECTRUM AND COMPOSITION MEASUREMENTS OF COSMIC RAYS FROM GRAPES-3 EXPERIMENT	2779
<i>F. Varsi, S. Ahmad, M. Chakraborty, A. Chandra, S.R. Dugad, S.K. Gupta, B. Hariharan, Y. Hayashi, S.S.R. Inbanathan, P. Jagadeesan, A. Jain, P. Jain, V.B. Jhansi, S. Kawakami, H. Kojima, S. Mahapatra, P.K. Mohanty, S.D. Morris, Y. Muraki, P.K. Nayak, A. Oshima, D. Pattanaik, P.S. Rakshe, K. Ramesh, B.S. Rao, L.V. Reddy, S. Sharma, S. Shibata, K. Tanaka, M. Zuberi</i>	
MEASUREMENT OF THE ENERGY SPECTRUM OF ULTRA-HIGH ENERGY COSMIC RAYS USING THE PIERRE AUGER OBSERVATORY	2787
<i>V. Verzi</i>	
LOW SURFACE BRIGHTNESS OPTICAL EMISSION AS A PROBE OF COSMIC RAY RESERVOIRS.....	2795
<i>T. Vestrand, L. Parker</i>	

VOLUME 5

TESTING HADRONIC INTERACTIONS USING HYBRID OBSERVABLES	2803
<i>J. Vicha, A. Yushkov, D. Nosek, P. Travnicek, E. Santos</i>	
INVISIBLE ENERGY FROM KASCADE DATA	2811
<i>J. Vicha, P. Travnicek, D. Nosek, V. Novotny, J. Ebr</i>	
A METHOD FOR CLOUD MAPPING IN THE FIELD OF VIEW OF THE INFRA-RED CAMERA DURING THE EUSO-SPB1 FLIGHT	2819
<i>A. Bruno, A. Anzalone, C.F. Vigorito</i>	
WRF (WEATHER RESEARCH AND FORECASTING) MODEL AND RADIATIVE METHODS FOR CLOUD TOP HEIGHT RETRIEVAL ALONG THE EUSO-SPB1 TRAJECTORY	2827
<i>S. Monte, C.F. Vigorito, M.E. Bertaina, S. Ferrarese, K. Shinozaki, S. Briz</i>	
MACHINE LEARNING APPROACH FOR AIR SHOWER RECOGNITION IN EUSO-SPB DATA.....	2835
<i>M. Vrábel, J. Genci, P. Bobik, F. Bisconti</i>	
A SIZE AND AGE DEPENDENCE STUDY OF SHOWER FRONT CURVATURE WITH GRAPES-3 ARRAY	2843
<i>B.J. Vuta, S. Ahmad, A. Chandra, S.K. Dugad, S.K. Gupta, B. Hariharan, Y. Hayashi, P. Jagadeesan, A. Jain, S. Kawakami, H. Kojima, P.K. Mohanty, S.D. Morris, P.K. Nayak, A. Oshima, B.S. Rao, L.V. Reddy, S. Shibata, M. Zuberi</i>	
LEAK TEST FOR LINERS OF MUON DETECTORS OF LHAASO	2851
<i>L. Wang</i>	

STATUS, CALIBRATION, AND COSMIC RAY DETECTION OF ARIANNA-HCR STATION.....	2857
<i>S.H. Wang</i>	
THE ENERGY CALIBRATION USING THE MOON SHADOW OF LHAASO-WCDA DETECTOR.....	2865
<i>Y. Wang, M. Zha, Z. Cao, Xin Zhang</i>	
SEASONAL VARIATION OF ATMOSPHERIC NEUTRINOS IN ICECUBE	2873
<i>P. Heix, S. Tilav, C. Wiebusch, M. Zöcklein</i>	
THE EXTREME UNIVERSE SPACE OBSERVATORY ON A SUPER-PRESSURE BALLOON II MISSION.....	2881
<i>L. Wiencke</i>	
STUDY OF THE PHENOMENOLOGY OF THE HADRONIC INTERACTIONS IN THE RECONSTRUCTION OF EXTENSIVE AIR SHOWERS	2889
<i>R. Wiklich Sobrinho, M.A.L. de Oliveira</i>	
MODIFICATION OF THE ENERGY SPECTRUM OF UHECR BY THE GALACTIC MAGNETIC FIELD FOR ANISOTROPIC ARRIVAL DIRECTIONS	2897
<i>T. Winchen, B. Eichmann</i>	
SEARCH FOR MAGNETICALLY-INDUCED SIGNATURES IN THE ARRIVAL DIRECTIONS OF ULTRA-HIGH ENERGY COSMIC RAYS MEASURED BY THE PIERRE AUGER OBSERVATORY	2903
<i>M. Wirtz</i>	
CONTRACTING ALIGNMENT PATTERNS IN THE ARRIVAL DIRECTIONS OF ULTRA- HIGH ENERGY COSMIC RAYS INDUCED IN THE GALACTIC MAGNETIC FIELD	2911
<i>M. Wirtz, M. Erdmann</i>	
THE EXPECTATION OF LHAASO SENSITIVITY ON THE COSMIC-RAY ELECTRON	2919
<i>S. Wu, S. Chen, H. He, S. Lin, Y. Nan</i>	
STUDY ON THE MUON LATERAL DISTRIBUTION BASED ON THE FIRST STAGE OF LHAASO-KM2A	2928
<i>G. Xin, Y. Zhang, Y.L. Feng, S. Zhao, Y.Y. Guo, G. Xiao, C. Li, X. Zuo, L.Y. Wang, N. Cheng</i>	
CLOUD MONITORING SYSTEM BY VISIBLE-LIGHT FISHEYE CCD FOR THE TELESCOPE ARRAY	2936
<i>K. Yamazaki, T. Tomida, R. Nakamura, Y. Saito</i>	
THE PERFORMANCE OF LED CALIBRATION SYSTEM FOR CHERENKOV TELESCOPE OF LHAASO.....	2942
<i>M. Yang, S. H. Chen, S. S. Zhang, Y. Zhang, L. Q. Yin, Z. Y. You, L. L. Ma, W. M. Zhang, Z. Cao</i>	
SEARCH FOR DIFFUSE γ -RAY EMISSION FROM GALACTIC PLANE WITH YANGBAJING HYBRID ARRAY	2950
<i>Y. Yao, J. He, Y. Guo, Y. Zhang, C. Liu, T. Chen, H. Hu</i>	
THE MVA FOR PURE PROTON AND MIXED H&HE SAMPLES SELECTION IN HYBRID MEASUREMENT OF COSMIC RAY SHOWERS WITH LHAASO EXPERIMENT	2957
<i>L. Yin, S. S. Zhang, Z. Cao, L. L. Ma, M. J. Yang, Y. Zhang, Z. Y. You, Z. Z Zong, T. Suomijarvi</i>	

THE COSMIC RAY SPECTRUM OF LIGHT COMPONENT ABOVE 10TEV MEASURED BY LHAASO EXPERIMENT.....	2966
<i>Z. You, Z. Cao, L. Ma, S. Zhang, L. Yin, M. Yang, Y. Zhang</i>	
CHARACTERIZATION OF THE PHOTOMULTIPLIER TUBE FOR THE LHAASO ELECTROMAGNETIC PARTICLE DETECTOR	2974
<i>Y. Yu, H. Lv, D. Liu, X. Sheng, C. Feng</i>	
MASS COMPOSITION OF COSMIC RAYS WITH ENERGIES ABOVE $10^{17.2}$ EV FROM THE HYBRID DATA OF THE PIERRE AUGER OBSERVATORY	2982
<i>A. Yushkov</i>	
MODELING THE SATURATION OF THE BELL INSTABILITY USING HYBRID SIMULATIONS	2990
<i>G. Zacharegkas, D. Caprioli, C. Haggerty</i>	
A CHARGE CALIBRATION METHOD FOR THE LHAASO-WCDA DYNAMIC RANGE EXPANSION SYSTEM.....	2998
<i>Z. Zeng, S. Hu, L. Chen, B. Chen, F. Ji, C. Liu, B. Gao, X. Li</i>	
HADRONIC INTERACTIONS AND EAS MUON MULTIPLICITY INVESTIGATED WITH THE NEW TIBET HYBRID EXPERIMENTAL MUON DATA	3006
<i>L. Zhai</i>	
LARGE-SCALE COSMIC RAY ANISOTROPY WITH TIBET AIR SHOWER ARRAY	3010
<i>Y. Zhang</i>	
PROPERTIES AND PERFORMANCE OF SIPM BASED CHERENKOV TELESCOPE FOR LHAASO.....	3018
<i>S. Zhang, M. Yang, Z. Cao, Y. Zhang, L. Ma, L. Yin, Z. You, M. Ge, L. Zhang, R. Lu, R. Zhou, C. Yang, T. Montaruli, D.D. Volpe, M. Heller</i>	
BATCH MEASUREMENT OF ATTENUATION LENGTH OF WAVELENGTH-SHIFTING FIBERS FOR LHAASO ELECTROMAGNETIC DETECTORS	3026
<i>X. Zhang, C. Hou, X. Sheng</i>	
TEST OF HADRONIC INTERACTION MODELS IN THE FORWARD REGION FROM 10 TEV TO 1 PEV WITH THE NEW TIBET EAS CORE DATA	3033
<i>Y. Zhang</i>	
STUDY OF THE SHARP “KNEE” PHENOMENON OF COSMIC RAY SPECTRUM BY USING NEWLY UPGRADED TIBET AS γ EXPERIMENT.....	3036
<i>Y. Zhang, J. Huang, D. Chen, L.M. Zhai, X. Chen, Y.H. Lin, J.H. Fang, Y. Nakamura</i>	
THE ANISOTROPY OF CRS OBSERVED BY YBJ-HA EXPERIMENT	3038
<i>Y. Guo, S. Zhao, Y. Zhang, Y. Feng, Y. Yao, J. He, Y. Guo, C. Liu, H. Hu</i>	
ANISOTROPY IN THE MASS COMPOSITION FROM THE TELESCOPE ARRAY SURFACE DETECTOR DATA	3046
<i>Y. Zhezher, G. Rubtsov, P. Sokolsky, S. Troitsky</i>	
THE EFFECT OF NEAR-EARTH THUNDERSTORM ELECTRIC FIELD ON THE INTENSITY OF THE SHOWER EVENTS DETECTED BY ARGO-YBJ	3053
<i>K. Axi, X. Zhou, B. Zhao, D. Huang, H. Jia</i>	

THE EFFECT STUDY OF THUNDERSTORM ELECTRIC FIELD ON THE LATERAL DISTRIBUTION OF POSITRONS AND ELECTRONS AT YBJ.....	3061
<i>K. Axi, X. Zhou, B. Zhao, D. Huang</i>	
EXTINCTION COEFFICIENT FROM ATMOSPHERIC AEROSOLS OVER LHAASO	3069
<i>X. Li, Q.H. Chen, H. Liu, Y. He, H.Y. Jia, F. Zhu, N. Xie, W. Long</i>	
THE PERFORMANCE OF THE LASER SYSTEMS IN THE CALIBRATION SYSTEM OF LHAASO-WFCTA.....	3077
<i>N. Xie, H. Liu, Y. Hu, W. Long, H. Jia, F. Zhu, Q. Chen</i>	
SIMULATION OF ATMOSPHERIC PRESSURE EFFECTS ON PARTICLE DENSITIES MEASURED BY GRAPES-3	3084
<i>M. Zuberi, S. Ahmad, M. Chakraborty, A. Chandra, S.R. Dugad, S.K. Gupta, B. Hariharan, Y. Hayashi, P. Jagadeesan, A. Jain, P. Jain, V.B. Jhansi, S. Kawakami, H. Kojima, S. Mahapatra, P.K. Mohanty, S.D. Morris, Y. Muraki, P.K. Nayak, A. Oshima, D. Pattanaik, P.S. Rakshe, K. Ramesh, B.S. Rao, L.V. Reddy, S. Sharma, S. Shibata, K. Tanaka, F. Varsi</i>	
ESTIMATION OF SOLAR DISK GAMMA-RAY EMISSION BASED ON GEANT4	3091
<i>Z. Li, S. Chen, Y. Nan, H. He, C. Li</i>	
ANOMALOUSLY BEHAVIOR OF CR BAROMETRIC EFFECT DEEP UNDERGROUND: POSSIBLE INFLUENCE OF EAS MUONS.....	3097
<i>L. Dorman, V. Yanke</i>	

DM - DARK MATTER

ALP-PHOTON MIXING IN PULSAR MAGNETOSPHERES	3105
<i>A. Archer, J. Buckley</i>	
DARK MATTER SEARCHES TOWARDS THE WLM DWARFIRREGULAR GALAXY WITH H.E.S.S.	3114
<i>C. Armand, V. Poireau, E. Moulin, L. Rinchiuso</i>	
DARK MATTER SEARCHES WITH THE ICECUBE UPGRADE	3122
<i>S. Baur</i>	
PERSPECTIVE ON DARK MATTER ANNIHILATION LIMITS FROM THE LHAASO GAMMA-RAY OBSERVATION OF DWARF SPHEROIDAL GALAXIES.....	3129
<i>X. Bi, S.J. Lin, P.F. Yin</i>	
VOYAGER PROBING DARK MATTER	3137
<i>M. Boudaud</i>	
GALACTIC MAGNETIC FIELDS IN THE CONTEXT OF DARK MATTER. INFLUENCE ON THE ROTATION CURVES OF SPIRAL GALAXIES.....	3145
<i>L. Bratek, J. Jalocha</i>	
POTENTIAL DARK MATTER SIGNALS AT NEUTRINO TELESCOPES	3153
<i>M. Chianese</i>	
DIFFERENTIABLE PROBABILISTIC PROGRAMMING FOR STRONG GRAVITATIONAL LENSING.....	3161
<i>M. Chianese</i>	

SETTING UPPER LIMITS ON THE LOCAL BURST RATE DENSITY OF PRIMORDIAL BLACK HOLES USING HAWC	3169
<i>K. Engel, A. Peisker, P. Harding, J. Wood, I. Martinez-Castellanos, A. Albert, K. Tollefson</i>	
SEARCH FOR DARK PHOTONS AS CANDIDATES FOR DARK MATTER WITH FUNK	3177
<i>A. Andrianavalomahefa, K. Daumiller, R. Engel, B. Döbrich, J. Jaeckel, M. Kowalski, A. Lindner, H.J. Mathes, J. Redondo, M. Roth, T. Schwetz, C.M. Schäfer, R. Ulrich, D. Veberic</i>	
UNIDENTIFIED FERMI OBJECTS IN THE VIEW OF H.E.S.S. - POSSIBLE DARK MATTER CLUMPS	3185
<i>D. Glawion, D. Malyshev, E. Moulin, L. Oakes, L. Rinchuso, A. Viana</i>	
SENSITIVITY OF THE ANTARES NEUTRINO TELESCOPE FOR SECLUDED DARK MATTER SEARCHES	3193
<i>S.R. Gozzini, C. Lagunas, F. Sala, J.d.D. Zornoza Gómez</i>	
CONSTRAINTS ON CROSS SECTION AND LIFETIME OF DARK MATTER WITH HAWC OBSERVATIONS OF DWARF IRREGULAR GALAXIES	3200
<i>S. Hernández Cadena, V. Gammaldi, J. Serna Franco, R. Alfaro Molina, E. Karukes, P. Salucci</i>	
COMBINED SEARCH FOR NEUTRINOS FROM DARK MATTER ANNIHILATION IN THE GALACTIC CENTRE USING ANTARES AND ICECUBE	3206
<i>N. Iovine, J.A. Aguilar Sanchez, S. Baur, S.R. Gozzini, J.d.D. Zornoza Gómez</i>	
THE BSUIN PROJECT	3214
<i>K. Jędrzejczak, Z. Debicki, M. Kasztelan, W. Marszał, J. Orzechowski, M. Przybylak, P. Tokarski, P. Jalas, V. Isoherranen, J. Joutsenvaara, E.r. Niinikoski, R. Heikkila, H. Ahola, P. Aro, T. Vuorela, J. Kisiel, K. Karpa, K. Szkilniarz, M. Laaksoharju, M. Ohlsson, W. Pytel, D. Horner, H. Mischo, R. Giese, K. Jaksch, V. Mockus, T. Valys, V. Gostilo, V. Shekov, A. Stepanov, V.K.A. Paat</i>	
STUDY FOR MOVING NUCLEARITES AND INTERSTELLAR METEORIODS USING HIGH SENSITIVITY CMOS CAMERA	3222
<i>F. Kajino, I. Ide, R. Ide, Y. Tameda, K. Shinozaki, M.E. Bertaina, A. Cellino, M. Casolino, T. Ebisuzaki, Y. Takizawa, L. Piotrowski, H. Sagawa, J.N. Matthews</i>	
SEARCH FOR DARK MATTER ANNIHILATION TO NEUTRINOS FROM THE SUN	3230
<i>A. Kheirandish, C. Arguelles, J. Lazar, Q. Liu</i>	
A SEARCH FOR DARK MATTER SIGNALS IN THE GALACTIC HALO WITH HAWC	3238
<i>J. Lundeen, J.P. Harding</i>	
DARK MATTER SEARCHES WITH HAWC	3245
<i>J. Lundeen</i>	
SEARCH FOR DARK MATTER SIGNATURES IN THE COSMIC-RAY ELECTRON AND POSITRON SPECTRUM MEASURED BY THE FERMI LARGE AREA TELESCOPE	3253
<i>M.N. Mazziotta, A. Cuoco, P. De La Torre Luque, F. Loparco, D. Serini</i>	
INTERPRETATION OF THE CALET ELECTRON+POSITRON SPECTRUM CONCERNING DARK MATTER SIGNATURES	3261
<i>H. Motz, Y. Asaoka, S. Bhattacharyya</i>	
EVENT RECONSTRUCTION PERFORMANCE WITH THE GAPS EXPERIMENT	3269
<i>R. Munini, M. Boezio, P. von Doetinchem, N. Marcelli, A. Stoessl, E. Vannuccini</i>	

DARK MATTER SEARCHES FROM THE SUN WITH THE KM3NET-ORCA DETECTOR.....	3277
<i>S. Navas, D. López-Coto, J.D. Zornoza</i>	
SEARCHING FOR DARK MATTER DECAY SIGNALS IN THE GALACTIC HALO WITH THE MAGIC TELESCOPES.....	3285
<i>D. Ninci, T. Inada, J. Rico, D. Kerszberg, M. Doro, S. Lombardi, C. Maggio, M. Hütten, M.V. Acosta</i>	
SEARCH FOR DARK MATTER ANNIHILATION IN THE CENTER OF THE EARTH WITH 8 YEARS OF ICECUBE DATA.....	3293
<i>G. Renzi</i>	
DARK MATTER SEARCH WITH H.E.S.S. TOWARDS ULTRA-FAINT DWARF NEARBY DES SATELLITES OF THE MILKY WAY	3301
<i>L. Rinchiuso, E. Moulin, C. Armand, V. Poireau</i>	
HUNTING FOR HEAVY DARK MATTER IN THE GALACTIC CENTER WITH GROUND- BASED CHERENKOV TELESCOPES	3308
<i>L. Rinchiuso, N.L. Rodd, E. Moulin, T. Slatyer</i>	
CONSTRAINTS ON DARK MATTER SCATTERING WITH LONG-LIVED MEDIATORS USING GAMMA-RAYS FROM THE SUN	3316
<i>D. Serini, F. Loparco, M.N. Mazziotta</i>	
SEARCH FOR NUCLEARITES BY THE SATELLITE-BASED TUS AIR FLUORESCENCE DETECTOR	3324
<i>K. Shinozaki, A. Montanaro, M.E. Bertaina, F. Fenu, S. Ferrarese, P. Klimov, S. Sharakin, M. Zotov, A. Cellino, A. Castellina, A. Anzalone, R. Caruso, F. Isgró</i>	
NEW VENUES IN FORMATION AND DETECTION OF PRIMORDIAL BLACK HOLE DARK MATTER	3332
<i>V. Takhistov</i>	
THE SEARCH FOR DARK MATTER WITH METASTABLE MEDIATORS WITH THE ICECUBE OBSERVATORY.....	3341
<i>C. Tönnis</i>	
STATUS OF COSMIC-RAY ANTINUCLEI SEARCHES.....	3348
<i>P. von Doetinchem</i>	
SEARCHES FOR DARK MATTER WITH THE ANTARES AND KM3NET NEUTRINO TELESCOPES.....	3356
<i>S.R. Gozzini, J.d.D. Zornoza Gómez</i>	

GRD - GAMMA RAY DIRECT

SEARCH FOR GAMMA-RAY COUNTERPARTS OF NEWLY DISCOVERED RADIO ASTROPHYSICAL SOURCES.....	3365
<i>J. Bazo Alba, S. Best</i>	
STUDY OF THE VARIABLE BROADBAND EMISSION OF MARKARIAN 501 DURING THE MOST EXTREME SWIFT X-RAY ACTIVITY	3372
<i>J. Becerra Gonzalez, D. Paneque, C. Wendel, F. Tavecchio, K. Noda, K. Ishio, J. Sitarek</i>	
HIGH-ENERGY EMISSION FROM GRBS: 10 YEARS WITH FERMI-LAT.....	3375
<i>E. Bissaldi, M. Axelsson, N. Omodei, G. Vianello</i>	

CALET UPPER LIMITS ON GEV-ENERGY GAMMA-RAY BURST EMISSION	3383
<i>N.W. Cannady</i>	
SHELL LIKE SUPERNOVA REMNANTS OBSERVED WITH FERMI-LAT	3391
<i>F. de Palma, C. Clark, L. Di Venere</i>	
REDSHIFT OF THE BLAZAR KUV 00311-1938: MODELING THE EBL ABSORPTION	3399
<i>M. Fernandez Alonso, A. Pichel, A.C. Rovero</i>	
GAMMA-RAY SPECTRAL AND MORPHOLOGICAL STUDY OF HESS J1912+101 OBSERVED BY MAGIC AND FERMI-LAT	3406
<i>D. Green, T. Nagayoshi, F. dePalma</i>	
SUBSYSTEM DEVELOPMENT FOR THE ALL-SKY MEDIUM ENERGY GAMMA-RAY OBSERVATORY (AMEGO) PROTOTYPE	3414
<i>S. Griffin</i>	
BORESIGHT ALIGNMENT WITH THE DARK MATTER PARTICLEEXPLORER	3422
<i>W. Jiang, X. Li, K. Duan, J. Zang, S. Lei</i>	
COSMIC RAYS IN THE ORION-ERIDANUS SUPERBUBBLE	3430
<i>T. Joubaud, I. Grenier, J.M. Casandjian</i>	
SIMULATING AN X-RAY POLARIMETER GAS PIXEL DETECTOR	3438
<i>A. Jung</i>	
FERMI-LAT OBSERVATIONS OF γ -RAY EMISSION TOWARDS THE OUTER HALO OF M31	3446
<i>C. Karwin, S. Murgia, S. Campbell, I. Moskalenko</i>	
GAMMA-RAY BURST OBSERVATIONS WITH THE CALET GAMMA-RAY BURST MONITOR	3454
<i>Y. Kawakubo</i>	
POLAR-2: THE FIRST LARGE SCALE GAMMA-RAY POLARIMETER	3462
<i>M. Kole</i>	
SEARCH FOR HIGH-REDSHIFT BLAZARS WITH FERMI/LAT	3470
<i>M. Kreter, M. Kadler, F. Krauss, S. Buson, R. Ojha, J. Wilms, M. Böttcher</i>	
RECENT GAMMA-RAY RESULTS FROM DAMPE	3477
<i>X. Li, K. Duan, W. Jiang, Z. Shen, M. Munoz Salinas</i>	
ALL-SKY-ASTROGAM: A MEV COMPANION FOR MULTIMESSENGER ASTROPHYSICS	3485
<i>M. Mallamaci, A. De Angelis, V. Tatischeff, R. Rando, M. Tavani, U. Oberlack, R. Walter, G. Ambrosi, A. Argan, P. von Balmoos, D. Bastieri, E. Bernardini, S. Brandt, A. Bulgarelli, A. Bykov, V. Fioretti, I.A. Grenier, L. Hanlon, D. Hartmann, M. Hernanz, G. Kanbach, I. Kuvvetli, P. Laurent, M. Mariotti, M.N. Mazziotta, J. Mc Enery, S. Mereghetti, A. Morselli, K. Nakazawa, M. Pearce, E. Prandini, J. Rico, R. Curado da Silva, X. Wu, A. Zdziarski, A. Zoglauer</i>	
DETECTION OF γ -RAY HALO AROUND GEMINGA WITH THE FERMI-LAT AND IMPLICATIONS FOR THE POSITRON FLUX	3493
<i>S. Manconi, M. Di Mauro, F. Donato</i>	

VOLUME 6

PROBING THE GAMMA-RAY SOURCE POPULATIONS WITH PHOTON COUNT STATISTICS AND ANISOTROPIES.....	3501
<i>S. Manconi, F. Donato, N. Fornengo, M. Korsmeier, M. Regis</i>	
EFFICIENT PARTICLE ACCELERATION FROM HESS J1640-465 AND THE PEVATRON CANDIDATE HESS J1641-463	3509
<i>A. Mares, M.H. Grondin, M. Lemoine-Goumard</i>	
ALL-SKY MEDIUM ENERGY GAMMA-RAY OBSERVATORY (AMEGO)	3517
<i>A. Moiseev</i>	
MODULAR POSITION-SENSITIVE HIGH-RESOLUTION CALORIMETER FOR USE IN SPACE GAMMA-RAY INSTRUMENTS BASED ON VIRTUAL FRISCH-GRID CDZNT DETECTORS.....	3525
<i>E.A. Hays, A. Bolotnikov, C. Kierans, A. Moiseev, D. Thompson</i>	
NEW MISSION CONCEPT: INVESTIGATION OF THE GALACTIC CENTER WITH GALACTICCENTEREXPLORER (GALCENEX).....	3534
<i>A. Moiseev, E.A. Hays, D. Thompson, C. Kierans</i>	
HIGH-ENERGY GAMMA-RAY OBSERVATIONS USING THE CALORIMETRIC ELECTRON TELESCOPE (CALET) ON THE ISS	3542
<i>M. Mori, Y. Asaoka</i>	
GAMMA-RAY PULSARS WITH DAMPE.....	3550
<i>M. Munoz Salinas, X. Wu, F. Gargano, K.K. Duan, Z.Q. Shen</i>	
A CONSISTENT MODEL OF THE INTERSTELLAR GAMMA-RAY EMISSION TO INTERPRET FERMI LAT OBSERVATIONS OF DIFFUSE EMISSIONS	3558
<i>E. Orlando</i>	
COSMIC RAYS AND THE INTERSTELLAR MEDIUM WITH THE ALL-SKY MEDIUM ENERGY GAMMA-RAY OBSERVATORY (AMEGO).....	3560
<i>E. Orlando, I. Grenier, V. Tatischeff, A. Bykov, A. Strong, L. Tibaldo</i>	
PARTICLE ACCELERATION AT, AND GAMMA-RAY EMISSION FROM SUPERNOVA REMNANTS IN CHEMICALLY ENRICHED MEDIA.....	3565
<i>M. Pohl, M. Bhatt, A. Fedynitch, I. Sushch, R. Brose, S. Das, D. Meyer</i>	
UV TRANSIENT LUMINOUS EVENTS OBSERVED WITH A TERRESTRIAL PINHOLE	3571
<i>E. Ponce, S. Hernandez</i>	
HIGH-ENERGY GAMMA RAYS FROM THE MILKY WAY: TIME-DEPENDENT MODELLING OF COSMIC RAY PROPAGATION AND NON-THERMAL EMISSIONS WITH THE GALPROP CODE	3577
<i>T. Porter, G. Johannesson, I. Moskalenko</i>	
ENERGY-DEPENDENT MORPHOLOGY OF THE PULSAR WIND NEBULA HESS J1825-137 SEEN BY THE FERMI-LAT.....	3585
<i>G. Principe, A.M.W. Mitchell, J. Hinton, D. Parson, S. Caroff, J. Hahn, S. Funk</i>	
GAMMA-RAY IMAGING PERFORMANCE OF NUCLEAR EMULSION TELESCOPE IN GRAINE-2018 BALLOON EXPERIMENT	3593
<i>H. Rokujo, M. Komiyama, Y. Nakamura, S. Yamamoto</i>	

CONSTRAINING GRBS PSEUDO-REDSHIFTS USING DIFFERENT EMPIRICAL CORRELATIONS.....	3601
<i>J.R. Sacahui Reyes, M.A. Morales, M.M. Gonzalez</i>	
POSITIVE - A GRB POPULATION STUDY FOR THE CHERENKOV TELESCOPE ARRAY	3610
<i>M.G. Bernardini, E. Bissaldi, Z. Bosnjak, A. Carosi, P. D'Avanzo, T. Di Girolamo, S. Inoue, T. Gasparetto, G. Ghirlanda, F. Longo, A. Melandri, L. Nava, P. O'Brien, I. Sadeh, F. Schüssler, T. Stolarczyk, S. Vergani, C.F. Vigorito</i>	
SEARCH FOR A GAMMA-RAY LINE FEATURE WITH DAMPE	3618
<i>Z. Shen, Y.F. Liang, K.K. Duan, X. Li, Y.Z. Fan</i>	
RESULTS FORM THE LONG-TERM FERMI-LAT OBSERVATIONS OF THE WHITE DWARF BINARY PULSAR AR SCORPII	3626
<i>K.K. Singh, Q. Kaplan, P. Meintjes, F.A. Ramamonjisoa, H.J.v. Heerden, I.P.v.D. Westhuizen</i>	
INTRINSIC GEV-TEV GAMMA-RAY EMISSION FROM EHSP BLAZARS	3634
<i>K.K. Singh, P. Meintjes, N. Bhatt, B. vanSoelen</i>	
BURSTCUBE: MISSION CONCEPT, PERFORMANCE, AND STATUS	3642
<i>J.R. Smith, M.S. Briggs, A. Bruno, E. Burns, R. Caputo, B. Cenko, A. Cucchiara, G.A. De Nolfo, S. Griffin, L. Hanlon, D.H. Hartmann, M. Huig, A. Joens, C. Kierans, D. Kocevski, J.F. Krizmanic, A. Liend, S. McBreen, J.E. McEnery, L. Mitchell, D. Morris, D. Murphy, J.S. Perkins, J. Racusin, P. Shawhan, T. Tatoli, A. Uliyanov, S. Walsh, C. Wilson-Hodge</i>	
OVERVIEW OF THE POLAR MISSION.....	3649
<i>J. Sun</i>	
VERY-HIGH-ENERGY GRB EVENTS IN NOVEL FERMI-LAT PHOTON DATA AND THEIR EMISSION MECHANISM.....	3657
<i>M. Takahashi</i>	
GRAINE PROJECT AND FIRST RESULTS ON 2018 BALLOON-BORNE EXPERIMENT	3665
<i>S. Takahashi</i>	
THE MINI ASTROPHYSICAL MEV BACKGROUND OBSERVATORY (MAMBO): A CUBESAT FOR MEASURING THE MEV EXTRAGALACTIC GAMMA-RAY BACKGROUND.....	3672
<i>T. Vestrand, P. Bloser, A. Hoover, L. Parker, J. Wren</i>	
η CARINAE: PARTICLE ACCELERATION AND MULTI-MESSENGER ASPECTS.....	3680
<i>R. Walter, M. Balbo</i>	

GRI - GAMMA RAY INDIRECT

SEARCH FOR VERY HIGH ENERGY ($E > 100$ GEV) EMISSION FROM GEMINGA SUPERNOVA BY VERITAS.....	3689
<i>A. Abeysekara</i>	

CALIBRATION AND OPERATION OF SIPM-BASED CAMERAS FOR GAMMA-RAY ASTRONOMY IN PRESENCE OF HIGH NIGHT-SKY LIGHT	3694
<i>C.M. Alispach, I. Al Samarai, M. Balbo, A.M. Barbano, V. Beshley, A. Biland, J. Blazek, J. Blocki, J. Borkowski, T. Bulik, F.R. Cadoux, L. Chytka, V. Coco, N. De Angelis, D. Della Volpe, Y. Favre, T. Gieras, M. Grudzińska, P. Hamal, M. Heller, M. Hrabovsky, J. Jurysek, J. Kasperek, K. Konciewicz, A. Kotarba, É. Lyard, E. Mach, D. Mandat, S. Michal, J. Michałowski, R. Moderski, T. Montaruli, A. Nagai, D. Neise, J. Niemiec, T.R. Njoh Ekoume, M. Ostrowski, M. Palatka, P. Paško, M. Pech, B. Pilszyk, H. Przybiski, P. Rajda, Y. Renier, P. Rozwadowski, P. Schovanek, K. Seweryn, V. Sliusar, D. Smakulska, D. Sobczyńska, Ł. Stawarz, J. Świerblewski, P. Świerk, P. Travnicek, I. Troyano Pujadas, R. Walter, M. Wiecek, A. Zagdański, K. Ziętara</i>	
CHERENKOV TELESCOPE ARRAY POTENTIAL IN THE SEARCH FOR GALACTIC PEVATRONS	3702
<i>E.O. Angüner, F. Cassol, H. Costantini, C. Trichard, G. Verna</i>	
EXPLORING THE NATURE OF 2HWC J2006+341 WITH HAWC AND FERMI-LAT	3710
<i>M. Araya</i>	
STUDYING THE EXTREME BEHAVIOUR OF 1ES 2344+51.4	3718
<i>A. Arbet-Engels, M. Manganaro, D. Dorner, M. Cerruti, V.F. Ramazani</i>	
MONITORING RADIO GALAXIES AT TEV ENERGIES WITH HAWC	3726
<i>D. Avila, R. Alfaro, N. Fraija, M.M. González</i>	
STUDYING COSMIC-RAY INTERACTIONS IN GIANT MOLECULAR CLOUDS WITH THE HAWC GAMMA-RAY OBSERVATORY	3734
<i>H. Ayala</i>	
UNRAVELLING THE COMPLEX BEHAVIOR OF MRK421 WITH SIMULTANEOUS X-RAY AND VHE OBSERVATIONS DURING AN EXTREME FLARING ACTIVITY IN APRIL 2013.....	3741
<i>A. Babic, T. Hassan, D. Paneque, M. Balokovic, J. Finke, M. Petropoulou</i>	
A CONDITION MONITORING CONCEPT STUDIED AT THE MST PROTOTYPE FOR THE CHERENKOV TELESCOPE ARRAY	3744
<i>V. Barbosa Martins, G. Spengler, M. Garczarczyk, U. Schwanke</i>	
CHERENKOV TELESCOPE ARRAY SCIENCE: A MULTI-WAVELENGTH AND MULTI- MESSENGER PERSPECTIVE	3752
<i>U. Barres de Almeida</i>	
STUDIES OF THE PERFORMANCE OF AN ARRAY OF CHERENKOV TELESCOPES BY MEANS OF MULTI-OBJECTIVE EVOLUTIONARY OPTIMISATION	3760
<i>B.F. Souto, U. Barres de Almeida</i>	
STUDY OF PERSISTENT VHE GAMMA-RAY EMISSION DETECTED WITH THE MAGIC TELESCOPES FROM PKS 1510-089, DURING LOW FLUX STATES DETECTED BY FERMI- LAT	3768
<i>J. Becerra Gonzalez, J. Sitarek, C. Nigro, E. Lindfors, F. Tavecchio, V.F. Ramazani</i>	
FACT - PROBING THE PERIODICITY OF MRK 421 AND MRK 501	3771
<i>M. Beck, A. Arbet-Engels, D. Baack, M. Balbo, A. Biland, M. Blank, T. Bretz, K. Bruegge, M. Bulinski, J. Buss, M. Doerr, D. Dorner, D. Elsaesser, D. Hildebrand, R. Iotov, M. Klinger, K. Mannheim, S. Mueller, D. Neise, A. Neronov, M. Noethe, A. Paravac, W. Rhode, B. Schleicher, K. Sedlaczek, A. Shukla, V. Sliusar, L. Tani, F. Theissen, R. Walter, E. von Willert</i>	

HIGH ALTITUDE SITES FOR ASTROPARTICLE OBSERVATORIES IN PERU	3779
<i>J. Bellido, A. Romero-Wolf, R. Perca Gonzales, J. Vega Ramirez, S. Garcia Roca, M. Zamalloa, J. Samanes, L. Otiniano, W. Guevara Day, F. Schüssler, S. Kunwar</i>	
HIGHLIGHTS FROM THE VERITAS AGN OBSERVATION PROGRAM.....	3786
<i>W. Benbow</i>	
FOLLOWING UP TRANSIENT SOURCES AT VERY HIGH ENERGIES WITH MAGIC.....	3794
<i>A. Berti, E. Bernardini, W. Bhattacharyya, J. Cortina, S. Covino, D. Dorner, E.d.S. Espiñeira, A. Fattorini, L. Foffano, S. Fukami, M. Garzarczyk, J. Hoang, S. Inoue, F. Longo, M. Manganaro, D. Miceli, E. Moretti, K. Noda, M. Peresano, M. Ribó, K. Satalecka, A. Stamerra, Y. Suda, M. Will</i>	
SEARCHING FOR GRBS AT VHE WITH MAGIC: THE STATUS BEFORE CTA	3802
<i>A. Berti, L.A. Antonelli, Z. Bosnjak, J. Cortina, S. Covino, V. D'Elia, E.d.S. Espiñeira, S. Fukami, S. Inoue, F. Longo, D. Miceli, E. Moretti, L. Nava, K. Noda, S. Nozaki, M. Peresano, Y. Suda, M. Will</i>	
MAGIC OBSERVATION AND BROADBAND CHARACTERIZATION OF THE REMARKABLY BRIGHT FLARES OF 1ES 1959+650 IN 2016.....	3809
<i>W. Bhattacharyya, M. Takahashi, M. Hayashida</i>	
HAWC'S EYE - IMPLEMENTING HYBRID DETECTION AT THE HAWC GAMMA-RAY OBSERVATORY	3816
<i>J. Audehm, J. Serna, R. Alfaro, T. Bretz, M.M. González, A. Iriarte, J. Martínez-Castro, Y. Pérez, M. Schaufel, I. Torres</i>	
TOWARDS A LUMINOSITY FUNCTION OF TEV GAMMA-RAY BLAZARS	3824
<i>A. Brill</i>	
ELECTRON SPECTRUM OF THE DRAGONFLY PULSAR WIND NEBULA FROM X-RAY TO TEV	3832
<i>C. Brisbois, V. Joshi</i>	
FIRST GALACTIC SURVEY OF ENERGY-DEPENDENT DIFFUSION BY HAWC	3839
<i>C. Brisbois, H. Zhou</i>	
TOWARDS MULTI-INSTRUMENT AND REPRODUCIBLE GAMMA-RAY ANALYSIS	3844
<i>K. Bruegge, C. Nigro, C. Deil, R. Zanin, T. Hassan, J. King, J.E. Ruiz, L. Saha, R. Terrier, M. Nöthe, R. Bird, T.T.Y. Lin, J. Aleksic, C. Boisson, J.L. Contreras, A. Donath, L. Jouvin, J. Rico, K. Kosack, B. Khelifi, A. Sinha, N. Kelley-Hoskins</i>	
A FIBER OPTIC BASED HIGH VOLTAGE SYSTEM FOR STELLAR INTENSITY INTERFEROMETRY OBSERVATIONS	3850
<i>R. Cardon, N. Matthews, A.U. Abeysekara, D. Kieda</i>	
A SURVEY OF ACTIVE GALAXIES WITH THE HAWC GAMMA-RAY OBSERVATORY	3856
<i>A. Carramiñana Alonso, D. Rosa González, S. Coutiño de Leon, A.L. Longinotti</i>	
MAGIC STUDIES OF THE CRAB PULSAR AND NEBULA SPECTRA FOR ENERGIES ABOVE 20 GEV	3864
<i>G. Ceribella, G. D'Amico, F. Dazzi, Y. Iwamura, M. Lopez, J. R. Garcia, T. Saito, T. Schweizer, J. Sitarek</i>	

GAMMA-RAYS AND NEUTRINOS FROM TXS 0506+056: INTERPRETATION OF THE 2018/2019 MAGIC AND MWL MONITORING CAMPAIGN.....	3867
<i>M. Cerruti, E. Bernardini, W. Bhattacharyya, V. Fallah Ramazani, L. Foffano, S. Inoue, E. Prandini, C. Righi, K. Satalecka, N. Sahakyan, F. Tavecchio</i>	
A NORTHERN SKY SURVEY FOR 100TEV γ -RAY SOURCES USING THE TIBET AIR SHOWER ARRAY AND MUON DETECTOR ARRAY.....	3868
<i>X. Chen</i>	
ON THE SPECTRUM OF GAMMA-RAYS RANGING FROM MULTI TEV TO SUB PEV EMITTED FROM THE MGRO J1908+06 OBSERVED BY THE TIBET-AS+MD ARRAY.....	3871
<i>C. Ding</i>	
A 3-DIMENSIONAL LIKELIHOOD ANALYSIS METHOD FOR DETECTING EXTENDED SOURCES IN VERITAS	3874
<i>A. Chromey</i>	
STATUS OF THE LARGE SIZE TELESCOPES OF THE CHERENKOV TELESCOPE ARRAY	3882
<i>J. Cortina</i>	
SPECTRAL ANALYSIS OF THE BLAZARS MARKARIAN 421 AND MARKARIAN 501 WITH THE HAWC GAMMA-RAY OBSERVATORY	3890
<i>S. Coutiño de Leon, A.C. Alonso, D. Rosa-Gonzalez, A.L. Longinotti</i>	
EXPLORATION OF THE POTENTIAL OF THE RADIO-DETECTION TECHNIQUE FOR THE DETECTION OF HIGH-ENERGY GAMMA RAYS.....	3895
<i>R. Dallier, L. Bondonneau, D. Charrier, A. Coffre, S. Corbel, L. Denis, C. Dumez-Viou, A. Escudie, D. Garc.a-Fernández, J. Girard, J.M. Griesmeier, L. Koopmans, A. Loh, L. Martin, M. Pandey-Pommier, B. Revenu, P. Zarka</i>	
THE H.E.S.S. EXPERIMENT : CURRENT STATUS AND FUTURE PROSPECTS.....	3903
<i>M. De Naurois</i>	
RESOLVING THE KPC JET OF CENTAURUS A IN TEV GAMMA-RAYS	3912
<i>M. De Naurois</i>	
NEW STRINGENT LIV LIMITS FROM ASTROPHYSICAL GAMMA-RAY SOURCES	3914
<i>H. Martínez-Huerta, V. de Souza, R.G. Lang</i>	
MONTE CARLO STUDIES OF COMBINED MAGIC AND LST1 OBSERVATIONS.....	3918
<i>F. Di Pierro, L. Arrabito, A. Baquero Larriva, A. Berti, J. Bregeon, D. Depaoli, D. Dominis Prester, R. Lopez Coto, M. Manganaro, S. Mićanović, A. Moralejo, Y. Ohtani, L. Saha, J. Sitarek, Y. Suda, T. Terzić, I. Vovk, T. Vuillaume</i>	
STACEX: RPC-BASED DETECTOR FOR A MULTI-MESSENGEROBSERVATORY IN THE SOUTHERN HEMISPHERE.....	3924
<i>G. Di Sciascio, P. Camarri, R. Santonico, M. Cardillo, F. Marchese, G. Piano, M. Tavani, C. Bigongiari, A. Bulgarelli, V. Fioretti, S. Casanova</i>	
TIME DEPENDENT MODELING OF ELECTRON ACCELERATION AND COOLING DURING BLAZAR FLARES.....	3932
<i>A. Dmytriiev, H. Sol, A. Zech</i>	
ASSESSMENT OF THE GCT PROTOTYPE'S OPTICAL SYSTEM IMPLEMENTATION AND OTHER KEY PERFORMANCES FOR THE CHERENKOV TELESCOPE ARRAY	3940
<i>A. Dmytriiev, L. Dangeon, G. Fasola, H. Sol, A. Zech, J. Gironnet, O. Le Blanc, J.P. Amans, G. Buchholtz, J.L. Dournaux, F. de Frondat, D. Horville, J.M. Huet, I. Jégouzo, P. Laporte</i>	

THE CHERENKOV TELESCOPE ARRAY PERFORMANCE IN DIVERGENT MODE.....	3948
<i>A. Donini, T. Gasparetto, J. Bregeon, F.D. Pierro, F. Longo, G. Maier, A. Moralejo, T. Vuillaume</i>	
FACT - HIGHLIGHTS FROM MORE THAN SEVEN YEARS OF UNBIASED MONITORING AT TEV ENERGIES.....	3956
<i>D. Dorner, A. Arbet-Engels, D. Baack, M. Balbo, M. Beck, A. Biland, M. Blank, T. Bretz, K. Bruegge, M. Bulinski, J. Buss, M. Doerr, D. Elsaesser, D. Hildebrand, R. Iotov, M. Klinger, K. Mannheim, D. Neise, S.A. Mueller, A. Neronov, M. Noethe, A. Paravac, W. Rhode, B. Schleicher, K. Sedlaczek, A. Shukla, V. Sliusar, L. Tani, F. Theissen, R. Walter, E. von Willert</i>	
TOWARD A PUBLIC MAGIC GAMMA-RAY TELESCOPE LEGACY DATA PORTAL	3964
<i>M. Doro, C. Nigro, E. Prandini, A. Tramacere, M. Delfino, J. Delgado, E. do Souto, L. Jouvin, J. Rico</i>	
CHARACTERIZATION OF ATMOSPHERIC PROPERTIES AT THE FUTURE SITES OF THE CHERENKOV TELESCOPE ARRAY	3973
<i>J. Ebr, D. Mandat, M. Pech, L. Chytka, J. Jurysek, M. Prouza, P. Janeček, P. Trávníček, J. Blažek, T. Bulik, M. Cieslar, M. Suchenk, V. Rizi, E. Pietropaolo, M. Iarlori, C. Aramo, L. Valore, F. Di Pierro, P. Vallania, D. Depaoli, M. Will, M. Gaug, L. Font, M. Mašek, J. Eliášek, M. Jelinek, S. Karpov</i>	
OBSERVATIONS OF THE FSRQ 3C 279 DURING THE FLARING STATE OF 2017 AND 2018 WITH H.E.S.S.	3980
<i>G. Emery, M. Cerruti, A. Dmytriiev, F. Jankowsky, H. Prokoph, C. Romoli, M. Zacharias</i>	
OBSERVATIONS OF BLAZAR PKS 2023-07 IN FLARING STATE WITH HESS AND FERMI- LAT IN 2016-2017 AND CONSTRAINTS ON AN INTRINSIC CUT-OFF	3988
<i>G. Emery, F. Jankowsky, J.P. Lenain, J.P. Marais, T. Mbonani, M. Meyer, C. Romoli, B. van Soelen, A. Wierzcholska, M. Zacharias</i>	
POSSIBLE ORIGIN OF THE GEMINGA SLOW-DIFFUSION HALO	3996
<i>K. Fang, X.J. Bi, P.F. Yin</i>	
ANALYSIS METHODS FOR NEUTRINO FOLLOW-UP OBSERVATIONS WITH MAGIC	4003
<i>A. Fattorini</i>	
PROTOTYPE SCHWARZSCHILD-COUDER TELESCOPE FOR THE CHERENKOV TELESCOPE ARRAY: COMMISSIONING STATUS OF THE OPTICAL SYSTEM	4011
<i>Q. Feng, C. Adams, G. Ambrosi, M. Ambrosio, C. Aramo, W. Benbow, B. Bertucci, E. Bissaldi, M. Bitossi, A. Boiano, C. Bonavolontà, R. Bose, A. Brill, M. Caprai, S. Fegan, Q. Feng, E. Fiandrini, A. Gent, N. Giglietto, F. Giordano, R. Halliday, O. Hervet, G. Hughes, M. Ionica, W. Jin, P. Kaaret, D. Kieda, B.T. Kim, F. Licciulli, S. Loporchio, V. Masone, T. Meures, R. Mukherjee, A. Okumura, N. Otte, R. Paoletti, A. Petrashyk, J. Powell, K. Powell, D. Ribeiro, J. Rousselle, A. Rugliancich, M. Santander, R. Shang, B. Stevenson, L. Stiazzini, L. Tosti, V. Vagelli, M. Valentino, J. Vandenbroucke, V. Vassiliev, P. Wilcox, J.H. Buckley, C.E. Covault, L. Di Venere, T.B. Humensky, B.A.W. Mode, F.R. Pantaleo, L.P. Taylor, D.A. Williams</i>	
THE CHERENKOV TELESCOPE ARRAY SENSITIVITY TO THE TRANSIENT SKY.....	4019
<i>V. Fioretti, D. Ribeiro, T.B. Humensky, A. Bulgarelli, G. Maier, A. Moralejo, C. Nigro</i>	
A SURVEY OF TEV EMISSION FROM GALACTIC SUPERNOVA REMNANTS WITH HAWC.....	4027
<i>H. Fleischhack</i>	

MODELING THE NON-THERMAL EMISSION OF THE GAMMA CYGNI SUPERNOVA REMNANT UP TO THE HIGHEST ENERGIES	4035
<i>H. Fleischhack</i>	
EXTREME HIGH-ENERGY PEAKED BL LAC OBJECTS AND THEIR TEV GAMMA-RAY EMISSION: ARE THEY A HOMOGENEOUS POPULATION?	4043
<i>L. Foffano, E. Prandini, A. Franceschini, S. Paiano</i>	
TESTING BLAZAR EMISSION MODELS ON THE EXTREME BLAZAR PGC 2402248, NEWLY DISCOVERED AT VERY-HIGH-ENERGIES WITH THE MAGIC TELESCOPES	4050
<i>L. Foffano, J.B. Gonzalez, M. Cerruti, V.F. Ramazani, E. Prandini, F. Tavecchio, K. Asano, F. D'Ammando</i>	
EFFICIENT LABEL GATHERING FOR MACHINE TRAINING: RESULTS FROM MUON HUNTER 2	4055
<i>M. Laraia, D. Wright, H. Dickinson, A. Simenstad, K. Flanagan, S. Serjeant, L. Fortson</i>	
SEARCH FOR VERY-HIGH-ENERGY PHOTONS FROM GAMMA-RAY BURSTS WITH HAWC	4063
<i>N. Fraija, M.M. Gonzalez</i>	
DEEP MAGIC OBSERVATIONS OF THE GALACTIC CENTER REGION	4072
<i>C. Fruck, I. Vovk, M. Strzys, Y. Iwamura, S. Ventura</i>	
SEARCH FOR VERY-HIGH-ENERGY EMISSION WITH HAWC FROM GW170817 EVENT	4079
<i>A. Galván, N. Fraija, M.M. González</i>	
A 3-YEAR HAWC/SWIFT MONITORING OF GAMMA-RAY/X-RAY FLUX AND CORRELATIONS IN THE BL LAC MRK 421	4086
<i>J.A. Garcia-Gonzalez, M.M. González, N. Fraija</i>	
USING MUON RINGS FOR THE OPTICAL THROUGHPUT CALIBRATION OF THE CHERENKOV TELESCOPE ARRAY	4092
<i>M. Gaug, S. Fegan, A.M.W. Mitchell, M.C. Maccarone, T. Mineo, A. Okumura</i>	
CONSTRAINING THE PROPERTIES OF THE INTERSTELLAR TURBULENCE AROUND GEMINGA USING HAWC MEASUREMENTS	4100
<i>G. Giacinti, R. Lopez-Coto</i>	
ON THE TEV GAMMA-RAY AND X-RAY CORRELATIONS EXHIBITED IN BLAZARS	4108
<i>M. Osorio, R. Sacahui, M.M. González, N. Fraija, J.A. García-González</i>	
SEARCH FOR ULTRA-HIGH ENERGY PHOTONS: OBSERVING THE PRESHOWER EFFECT WITH GAMMA-RAY TELESCOPES	4116
<i>D. Gora, K.A. Cheminant, D.E. Alvarez Castillo, N. Dhital, P. Homola, P. Jagoda, K. Kopanski, M. Kasztelan, P. Kovacs, M. Marek, V. Nazaria, M. Niedzwiecki, K. Smelcerz, K. Smolek, J. Stasielak, O. Sushchov, K. Rzecki, T. Wibig, J. Zamora-Saa</i>	
VARIABILITY STUDY OF EXTREME BLAZARS WITH VERITAS	4124
<i>O. Gueta</i>	
CONSTRAINTS ON THE DIFFUSE GAMMA-RAY BACKGROUND WITH HAWC	4132
<i>J.P. Harding</i>	
PROVING THE OUTSTANDING CAPABILITIES OF IMAGING ATMOSPHERIC CHERENKOV TELESCOPES IN HIGH TIME RESOLUTION OPTICAL ASTRONOMY	4139
<i>T. Hassan, M. Daniel</i>	

STATUS AND FIRST RESULTS OF THE LHAASO EXPERIMENT	4147
<i>H. He</i>	

THE SST-1M PROJECT FOR THE CHERENKOV TELESCOPE ARRAY	4154
<i>M. Heller, I. Al Samarai, C.M. Alispach, M. Balbo, A.M. Barbano, V. Beshley, A. Biland, J. Blazek, J. Błocki, J. Borkowski, T. Bulik, F.R. Cadoux, L. Chytka, V. Coco, N. De Angelis, D. Della Volpe, Y. Favre, T. Gieras, M. Grudzińska, P. Hamal, M. Hrabovsky, J. Jurysek, J. Kasperek, K. Koncewicz, A. Kotarba, É. Lyard, E. Mach, D. Mandat, S. Michal, J. Michalowski, R. Moderski, T. Montaruli, A. Nagai, D. Neise, J. Niemiec, T.R. Njoh Ekoume, M. Ostrowski, M. Palatka, P. Pasko, M. Pech, B. Pilszyk, H. Przybilski, P. Rajda, Y. Renier, P. Rozwadowski, P. Schovanek, K. Seweryn, V. Sliusar, D. Smakulska, D. Sobczyńska, Ł. Stawarz, J. Świerblewski, P. Świerk, P. Travnicek, I. Troyano Pujadas, R. Walter, M. Wiecek, A. Zagdański, K. Zietara</i>	

SEARCH FOR PULSED GAMMA-RAY EMISSION IN THE 100 TEV REGION FROM SEVERAL PULSARS WITH THE TIBET AS+ MD ARRAY	4162
<i>K. Hibino</i>	

MULTIWAVELENGTH OBSERVATION OF MAXI J1820+070 WITH MAGIC, VERITAS AND H.E.S.S.	4165
<i>J. Hoang, E. Molina, M. Lopez, M. Ribó, O. Blanch, J. Cortina, G. Maier, N. Park, M. De Naurois, E. de Oña Wilhelmi, J.P. Ernenwein, D. Malyshev, A.M.W. Mitchell, S. Ohm, R. Zanin</i>	

SEARCHING FOR OPTICAL AND VHE COUNTERPARTS OF FAST RADIO BURSTS WITH MAGIC	4173
<i>J. Hoang, M. Will, S. Inoue, J.A. Barrio, J. Cortina, M. Lopez, B. Marcote, L.A. Tejedor</i>	

VERITAS OBSERVATIONS OF FAST RADIO BURSTS	4181
<i>J. Holder, R.S. Lynch</i>	

TESTING THE LIMITS OF PARTICLE ACCELERATION IN CYGNUS OB2 WITH HAWC	4189
<i>B. Hona, H. Fleischhack, P. Huentemeyer</i>	

STUDIES OF THE TIME STRUCTURE OF EXTENDED AIR SHOWERS FOR DIRECTION RECONSTRUCTION WITH THE HAWC OUTRIGGER ARRAY	4197
<i>D. Huang</i>	

VOLUME 7

MAGIC OBSERVATIONS OF THE NEARBY SHORT GRB 160821B: IMPLICATIONS FOR AFTERGLOW PHYSICS AND GRAVITATIONAL WAVE FOLLOW-UP	4204
<i>S. Inoue, L. Nava, K. Noda, P. Colin, S. Fukami, A. Carosi, A. Berti, M. Palatiello, F. Longo</i>	

MODELING OF BROADBAND SPECTRA AND RADIAL PROFILES OF EMISSION OF PULSAR WIND NEBULAE	4206
<i>W. Ishizaki</i>	

GAMMALEARN: A DEEP LEARNING FRAMEWORK FOR IACT DATA	4214
<i>M. Jacquemont, T. Vuillaume, A. Benoit, G. Maurin, P. Lambert, G. Lamanna, A. Brill</i>	

A COMPLEMENTARY VIEW OF THE GALACTIC PLANE IN TEV GAMMA RAYS BY HAWC AND H.E.S.S.	4222
<i>A. Jardin-Blicq, V. Marandon, F. Brun</i>	

AIR SHOWER RECONSTRUCTION USING HAWC AND THE OUTRIGGER ARRAY	4229
<i>V. Joshi, H. Schoorlemmer</i>	
MONTE CARLO STUDY OF SINGLE SST-1M PROTOTYPE FOR CHERENKOV TELESCOPE ARRAY	4238
<i>J. Jurysek, I. Al Samarai, C.M. Alispach, M. Balbo, A.M. Barbano, V. Beshley, A. Biland, J. Blazek, J. Błocki, J. Borkowski, T. Bulik, F.R. Cadoux, L. Chytka, V. Coco, N. De Angelis, D. Della Volpe, Y. Favre, T. Gieras, M. Grudzińska, P. Hamal, M. Heller, M. Hrabovsky, J. Kasperek, K. Koncewicz, A. Kotarba, E. Lyard, E. Mach, D. Mandat, S. Michal, J. Michalowski, R. Moderski, T. Montaruli, A. Nagai, D. Neise, J. Niemiec, T.R. Njoh Ekoume, M. Ostrowski, M. Palatka, P. Pasko, M. Pech, B. Pilszyk, H. Przybiski, P. Rajda, Y. Renier, P. Rozwadowski, P. Schovanek, K. Seweryn, V. Sliusar, D. Smakulska, D. Sobczyńska, Ł. Stawarz, J. Świerblewski, P. Świerk, P. Travnicek, I. Troyano Pujadas, R. Walter, M. Wiecek, A. Zagdański, K. Zietara</i>	
BROADBAND EMISSION OF BLAZAR S5 0716+714 DURING IMPRESSIVE OUTBURSTS	4246
<i>Y. Kajiwar, M. Manganaro, E. Lindfors, B. Rani, S.G. Jorstad, V.M. Larionov, A. Marscher</i>	
EXTENDED GAMMA-RAY EMISSION BEYOND 10 TEV FROM GEMINGA WITH THE TIBET AS+MD ARRAY	4254
<i>Y. Katayose</i>	
EXPECTED PERFORMANCE OF THE PROTOTYPE EXPERIMENT FOR THE ALPACA EXPERIMENT	4257
<i>S. Kato</i>	
100 TEV GAMMA-RAY OBSERVATION OF THE CRAB NEBULA WITH THE TIBET AIR SHOWER ARRAY	4263
<i>K. Kawata</i>	
CHARACTERIZING THE VHE EMISSION OF LS I +61 303 USING VERITAS OBSERVATIONS	4268
<i>D. Kieda</i>	
AUGMENTATION OF VERITAS IMAGING ATMOSPHERIC CHERENKOV TELESCOPES FOR STELLAR INTENSITY INTERFEROMETRY	4276
<i>D. Kieda, S. LeBohec, R. Cardon</i>	
HIGHLIGHTS FROM THE OBSERVATIONS OF THE MILKY WAY WITH H.E.S.S.	4284
<i>N. Komin</i>	
SEARCH FOR POINT-LIKE SOURCES IN THE LARGE MAGELLANIC CLOUD	4285
<i>N. Komin, M. Haupt</i>	
CTAPIPE: A LOW-LEVEL DATA PROCESSING FRAMEWORK FOR CTA	4293
<i>K. Kosack, M. Peresano</i>	
CONSTRAINING THE EVAPORATION RATE OF PRIMORDIAL BLACK HOLES USING ARCHIVAL DATA FROM VERITAS	4302
<i>S. Kumar</i>	
OPTIMIZATION STUDIES OF A WATER CHERENKOV DETECTOR FOR GAMMA-RAY ASTRONOMY	4310
<i>S. Kunwar, H. Schoorlemmer, J. Hinton</i>	

THE SUB-TEV TRANSIENT GAMMA-RAY SKY: CHALLENGES AND OPPORTUNITIES.....	4318
<i>G. La Mura, P. Assis, A. Blanco, R. Conceição, P. Fonte, L. Lopes, M. Pimenta, B. Tomé, C. Espírito Santo, L. Mendes, M. Ferreira, P. Abreu, P. Brogueira, L.F. Mendes, F. Barão, U. Barres de Almeida, R. Shellard, U. Giaccari, O. Lippmann, B. D'Ettorre Piazzoli, M. Doro, E. Prandini, C. Perennes, G. Matthiae, M. Tavani, R. Santonico, A. De Angelis, R.L. Coto, A. Chiavassa, J. Vicha, P. Travnicek, G. Di Sciascio</i>	
THE SPECTRUM OF THE CRAB NEBULA AND HIGHEST ENERGY PHOTONS MEASURED BY HAWC	4326
<i>J. Linnemann, P. Harding, J. Lundeen, S. Marinelli, H. Martínez-Huerta</i>	
THE MEASUREMENT OF THE ENERGY SPECTRUM OF MRK421 BY LHAASO-WCDA: MC STUDY	4333
<i>J. Liu</i>	
DETECTION OF THE GEMINGA PULSAR WITH MAGIC	4341
<i>M. López Moya</i>	
THE HYBRID INSTALLATION TAIGA: DESIGN, STATUS AND PRELIMINARY RESULTS	4344
<i>N. Lubsandorzhiev, I. Astapov, P. Bezyazeev, A. Borodin, M. Brueckner, N. Budnev, V. Chernykh, A. Chiavassa, A. Dyachok, O. Fedorov, A. Gafarov, A. Garmash, V. Grebenyuk, O. Gress, T. Gress, A. Grinyuk, O. Grishin, D. Horns, A. Igoshin, A. Ivanova, N. Kalmykov, Y. Kazarina, V. Kindin, P. Kirilenko, S. Kiryuhin, R. Kokoulin, K. Kompaniets, E. Korosteleva, V.V. Kozhin, E. Kravchenko, A. Kryukov, L. Kuzmichev, A. Lagutin, Y. Lemeshev, V. Lenok, B. Lubsandorzhiev, R. Mirgazov, R. Mirzoyan, R. Monkhoev, E. Osipova, A. Pakhorukov, A. Pan, M.I. Panasyuk, L. Pankov, A. Petrukhin, V. Poleschuk, M. Popescu, E. Popova, A. Porelli, E. Postnikov, V. Prosin, V. Ptuskin, A. Pushnin, R. Raikin, G. Rubtsov, E. Ryabov, Y. Sagan, V. Samoliga, A. Silaev, A. Silaev(junior), A. Sidorenkov, A. Skurikhin, V. Slunicka, A. Sokolov, Y. Suvorkin, L. Sveshnikova, V. Tabolenko, B. Tarashchansky, L. Tkachev, M. Thuczykont, A. Tonaev, N. Ushakov, P. Volchugov, D. Voronin, R. Wischnewski, A. Zagorodnikov, D. Zhurov, I. Yashin</i>	
GAMAS - A GENERIC AND MULTIPURPOSE ARCHIVE SYSTEM	4351
<i>E. Lyard, R. Walter, V. Sliusar, D. Neise, A. Biland, P. Fernández</i>	
LONG-TERM GAMMA-RAY OBSERVATIONS OF THE BINARY HESS J0632+057 WITH H.E.S.S., MAGIC AND VERITAS.....	4360
<i>G. Maier, O. Blanch, D. Hadasch, N. Komin, M. Lundy, A. López-Oramas, D. Malyshev, J. Moepi, S. Ohm, G. Pühlhofer, R. Prado, S. Schlenstedt, D.F. Torres, B. Zitzer</i>	
PERFORMANCE OF THE CHERENKOV TELESCOPE ARRAY	4368
<i>G. Maier</i>	
FIRST HAWC SPECTRA OF GALACTIC GAMMA-RAY SOURCES ABOVE 100 TEV AND THE IMPLICATIONS FOR COSMIC-RAY ACCELERATION	4376
<i>K. Malone</i>	
STUDY OF AXION-LIKE PARTICLES SIGNALS AT IMAGING AIR CHERENKOV TELESCOPES.....	4384
<i>R. Malta, M. Leigui</i>	
LATEST NEWS FROM THE HAWC OUTRIGGER ARRAY	4393
<i>V. Marandon, A. Jardin-Blicq, H. Schoorlemmer</i>	

SEARCH FOR VERY-HIGH ENERGY GAMMA-RAY COUNTERPARTS OF GRAVITATIONAL WAVES WITH HAWC.....	4400
<i>I. Martinez</i>	
CONSTRAINTS ON LORENTZ INVARIANCE VIOLATION USING HAWC OBSERVATIONS ABOVE 100 TEV	4408
<i>H. Martínez-Huerta, S. Marinelli, J. Linnemann, J. Lundeen</i>	
TESTING COSMOLOGY AND FUNDAMENTAL PHYSICS WITH THE CHERENKOV TELESCOPE ARRAY	4414
<i>H. Martínez-Huerta, J. Biteau, J. Lefaucheur, M. Meyer, S. Pita, I. Vovk</i>	
ASTROPHYSICAL MEASUREMENTS WITH THE VERITAS STELLAR INTENSITY INTERFEROMETER.....	4422
<i>N. Matthews</i>	
THE CHERENKOV TELESCOPE ARRAY	4430
<i>D. Mazin</i>	
UPGRADING THE PROTOTYPE SCHWARZSCHILD-COUDER TELESCOPE CAMERA TO A WIDE-FIELD, HIGH-RESOLUTION INSTRUMENT	4438
<i>T. Meures</i>	
FOLLOWING UP GW ALERTS WITH MAGIC: THE THIRD LIGO/VIRGO OBSERVATION RUN	4446
<i>D. Miceli, L.A. Antonelli, J. Becerra Gonzalez, A. Berti, Z. Bosnjak, S. Covino, B. De Lotto, F. Del Puppo, S. Inoue, F. Longo, E. Moretti, L. Nava, B. Patricelli, A. Stamerra</i>	
MUON CALIBRATION OF THE ASTRI-HORN TELESCOPE: PRELIMINARY RESULTS.....	4453
<i>T. Mineo, M.C. Maccarone, A. Compagnino, M. Capalbi, O. Catalano, G. Contino, D. Impiombato, P. Sangiorgi, S. Garozzo, D. Marano, V. Conforti</i>	
TOWARDS A 3D LIKELIHOOD ANALYSIS IN VERY-HIGH-ENERGY γ -RAY ASTRONOMY: THE CASE OF H.E.S.S.	4461
<i>L. Mohrmann, K. Nakashima, A. Specovius, D. Tiziani, S. Funk, C. van Eldik, S. Ohm</i>	
H.E.S.S. AND FERMI-LAT OBSERVATIONS OF PSR B1259-63/LS 2883.....	4469
<i>T. Murach, P. Bordas, C. Mariaud, C. Romoli, H. Prokoph</i>	
GAMMA RAY DIFFUSE EMISSION FROM THE GALACTICPLANE WITH HAWC DATA.....	4470
<i>A. Nayerhoda, F. Salesa Greusa, S. Casanova, D. Gaggeroc, D. Grasso, A. Marinelli</i>	
CTLEARN: DEEP LEARNING FOR GAMMA-RAY ASTRONOMY	4478
<i>D. Nieto Castaño, A. Brill, Q. Feng, T.B. Humensky, B. Kim, T. Miener, R. Mukherjee, J. Sevilla</i>	
STUDYING DEEP CONVOLUTIONAL NEURAL NETWORKS WITH HEXAGONAL LATTICES FOR IMAGING ATMOSPHERIC CHERENKOV TELESCOPE EVENT RECONSTRUCTION	4486
<i>D. Nieto Castaño, A. Brill, Q. Feng, M. Jacquemont, B. Kim, T. Miener, T. Vuillaume</i>	
MAXIMUM LIKELIHOOD SPECTRAL FITTING AND ITS APPLICATION TO EBL CONSTRAINTS	4494
<i>S. O'Brien</i>	
VERITAS OBSERVATIONS OF 1ES 1218+304 DURING THE 2019 VHE HIGH STATE.....	4502
<i>S. O'Brien</i>	

CONSTRAINING THE MAGNETIC FIELD IN THE EM170817 EJECTA WITH H.E.S.S. OBSERVATIONS.....	4510
<i>S. Ohm</i>	
PERFORMANCE OF THE INFN CAMERA CALIBRATION DEVICE OF THE FIRST LARGE SIZE TELESCOPE IN THE CHERENKOV TELESCOPE ARRAY	4511
<i>M. Palatiello, M. Iori, F. Cassol, D. Cauz, F. Ferrarotto</i>	
THE CRAB NEBULA SPECTRUM AT ~100 TEV MEASURED WITH MAGIC UNDER VERY LARGE ZENITH ANGLES.....	4515
<i>M. Peresano, R. Mirzoyan, I. Vovk, P. Temnikov, D. Zaric, N. Godinović, J. van Scherpenberg, J. Besenrieder</i>	
GAMMA-RAY BURST OBSERVATION AT VERY HIGH ENERGY WITH H.E.S.S.....	4522
<i>Q. Piel, C. Arcaro, H. Ashkar, E. Bissaldi, M. Böttcher, K. Egberts, A. Carosi, C. Hoischen, M. Holler, P. O'Brien, R.D. Parsons, H. Prokoph, G. Pühlhofer, G. Rowell, E. Ruiz-Velasco, M. Seglar-Arroyo, S. Wagner, F. Schüssler</i>	
MUON TAGGING ON THE BEE OF CHEC-S - A COMPACT HIGH-ENERGY CAMERA FOR THE CHERENKOV TELESCOPE ARRAY.....	4529
<i>R. Pillera, G. Giavitto, H. Prokoph</i>	
REVISIT OF NON-LINEAR LANDAU DAMPING FOR ELECTROSTATIC INSTABILITY DRIVEN BY BLAZAR-INDUCED PAIR BEAMS.....	4534
<i>M. Pohl</i>	
COSMIC-RAY PROPAGATION IN LIGHT OF RECENT HAWC OBSERVATIONS OF PULSAR WIND NEBULA.....	4540
<i>T. Porter, G. Johannesson, I. Moskalenko</i>	
COMBINED VERITAS AND NUSTAR OBSERVATIONS OF THE GAMMA-RAY BINARY HESS J0632+057	4548
<i>R.R. Prado, C. Hailey, S. Mandel, K. Mori</i>	
MAGIC EYES TO THE EXTREME: TESTING THE BLAZAR EMISSION MODELS ON EHBLS	4556
<i>E. Prandini, C. Arcaro, K. Asano, G. Bonnoli, M. Cerruti, F. D'Ammando, V.F. Ramazani, L. Foffano, F. Tavecchio</i>	
PROTOTYPE OPERATIONS OF ATMOSPHERIC CALIBRATION DEVICES FOR THE CHERENKOV TELESCOPE ARRAY	4565
<i>M. Prouza, J. Ebr, D. Mandat, M. Pech, L. Chytka, J. Jurysek, P. Janeček, P. Trávníček, J. Blažek, M. Gaug, M. Mašek, J. Eliášek, S. Karpov</i>	
MEASUREMENT OF THE EXTRAGALACTIC BACKGROUND LIGHT WITH VERITAS.....	4573
<i>E. Pueschel</i>	
PROSPECTIVE ANNUAL DETECTION RATE OF HIGH ENERGY GAMMA RAY BURSTS WITH LHAASO-WCDA	4580
<i>B. Qiao, M. Kang, Y. Yao, Y. Guo, H. Hu, Z. Yao</i>	
DISCOVERY OF THE TEV EMISSION FROM THE JET INTERACTION REGIONS OF SS 433 WITH HAWC	4589
<i>C.D. Rho, C.D. Rho, H. Zhou, S. BenZvi</i>	
HIGHLIGHTS OF GALACTIC PHYSICS WITH VERITAS	4597
<i>G. Richards</i>	

SUB-PARSEC AND PARSEC VHE EMISSION FROM THE CORE OF LLAGNS	4605
<i>J.C. Rodriguez-Ramirez, E.M. de Gouveia Dal Pino, R. Alves Batista</i>	
DEEP LEARNING DETECTION OF TRANSIENTS	4613
<i>I. Sadeh</i>	
TAIGA OBSERVATORY: IACT FABRICATION AND TESTS	4621
<i>Y. Sagan, I. Astapov, P. Bezyazeekov, A. Borodin, M. Brueckner, N. Budnev, A. Chiavassa, A. Dyachok, O. Fedorov, A. Gafarov, A. Garmash, V. Grebenyuk, O. Gress, T. Gress, A. Grinyuk, O. Grishin, D. Horns, A. Ivanova, N. Kalmykov, Y. Kazarina, V. Kindin, P. Kirilenko, S. Kiryuhin, R. Kokoulin, K. Kompaniets, E. Korosteleva, V.V. Kozhin, E. Kravchenko, M. Kunnas, L. Kuzmichev, Y. Lemeshev, V. Lenok, N. Lubsandorzhiev, B. Lubsandorzhiev, R. Mirgazov, R. Mirzoyan, R. Monkhoev, R. Nachtigall, E. Osipova, A. Pakhorukov, A. Pan, M.I. Panasyuk, L. Pankov, A. Petrukhin, V. Poleschuk, E. Popescu, E. Popova, A. Porelli, E. Postnikov, V. Prosin, V. Ptuskin, A. Pushnin, E. Rjabov, G. Rubtsov, B. Sabirov, V. Samoliga, A. Sidorenkov, A. Silaev, A. Silaev(junior), V. Slunecka, A. Skurikhin, A. Sokolov, Y. Suvorkin, L. Sveshnikova, V. Tabolenko, A. Tanaev, B. Tarashansky, L. Tkachev, M. Tluczykont, R. Wishnevski, I. Yashin, A. Zagorodnikov, D. Zhurov</i>	
HAWKING RADIATIONS FROM ACCELERATING AND ROTATING BLACK HOLES	4628
<i>K. Saifullah</i>	
OBSERVATION OF GAMMA-RAY EMISSION ABOVE 10 TEV FROM THE SUPER NOVA REMNANT G106.3+2.7 WITH THE TIBET AIR SHOWER ARRAY AND THE MUON DETECTOR ARRAY	4634
<i>T. Sako</i>	
ALPACA AIR SHOWER ARRAY TO EXPLORE 100TEV GAMMA-RAY SKY IN BOLIVIA	4638
<i>T. Sako, C. Calle, K. Hibino, N. Hotta, Y. Katayose, C. Kato, S. Kato, K. Kawata, W. Kihara, Y. Ko, H. Kojima, R. Mayta, P. Miranda, H. Mitsui, K. Munakata, H. Nakada, Y. Nakamura, M. Nishizawa, S. Ogio, M. Ohnishi, T. Ohura, A. Oshima, M. Raljevich, H. Rivera, T. Saito, T.K. Sako, Y. Sengoku, S. Shibata, A. Shiomi, M. Subieta, N. Tajima, W. Takano, M. Takita, Y. Tameda, K. Tanaka, R. Ticona, H. Tsuchiya, Y. Tsunesada, S. Udo, K. Yagisawa, Y. Yokoe</i>	
THE CALIBRATION OF THE FIRST LARGE-SIZED TELESCOPE OF THE CHERENKOV TELESCOPE ARRAY	4646
<i>S. Sakurai, D. Depaoli, R. Lopez-Coto</i>	
SPECTRAL AND MORPHOLOGICAL STUDIES OF THE VERY HIGH ENERGY GAMMA- RAY SOURCE 2HWC J1825-134	4654
<i>F. Salesa Greus, S. Casanova</i>	
RECENT RESULTS FROM THE VERITAS MULTI-MESSENGER PROGRAM	4662
<i>M. Santander</i>	
MAGIC AND MWL MONITORING OF THE BLAZAR TXS 0506+056 IN THE 2018/2019 SEASON	4670
<i>K. Satalecka, E. Bernardini, W. Bhattacharyya, M. Cerruti, V. Fallah Ramazani, L. Foffano, S. Inoue, E. Prandini, C. Righi, N. Sahakyan, F. Tavecchio</i>	
NEUTRINO TARGET OF OPPORTUNITY PROGRAM OF THE CHERENKOV TELESCOPE ARRAY	4675
<i>K. Satalecka, A. Brown, A. Rosales de león, O. Sergijenko, C. Fai Tung, R. Reimann, T. Glauch, I. Taboada</i>	

A NEXT-GENERATION GROUND-BASED WIDE FIELD-OF-VIEW GAMMA-RAY OBSERVATORY IN THE SOUTHERN HEMISPHERE.....	4683
<i>H. Schoorlemmer</i>	
SCIENCE WITH THE SOUTHERN GAMMA-RAY SURVEY OBSERVATORY (SGSO).....	4691
<i>F. Schüssler</i>	
H.E.S.S. SEARCHES FOR TEV GAMMA-RAYS ASSOCIATED TO HIGH-ENERGY NEUTRINOS	4693
<i>F. Schüssler, H. Ashkar, M. Backes, K. Egberts, F. Brun, M. Füssling, C. Hoischen, J.P. Lenain, I. Lypova, S. Ohm, D. Parsons, C. Romoli, M. Seglar-Arroyo, M. Zacharias, A. Zech</i>	
THE TRANSIENT PROGRAM OF THE CHERENKOV TELESCOPE ARRAY	4702
<i>F. Schüssler</i>	
SEARCHES FOR COUNTERPARTS OF GRAVITATIONAL WAVES AT VERY HIGH ENERGIES WITH H.E.S.S.....	4711
<i>M. Seglar-Arroyo, H. Ashkar, S. Bonnefoy, F. Brun, K. Egberts, M. Fülling, C. Hoischen, T. Murach, S. Ohm, G. Pühlhofer, G. Rowell, F. Schüssler, A. Taylor</i>	
THE GRAVITATIONAL WAVE FOLLOW-UP PROGRAM OF THE CHERENKOV TELESCOPE ARRAY	4719
<i>M. Seglar-Arroyo, E. Bissaldi, A. Bulgarelli, A. Carosi, G. Cella, T. Di Girolamo, T. Gasparetto, G. Ghirlanda, B. Humensky, S. Inoue, F. Longo, L. Nava, B. Patricelli, M. Razzano, D. Ribeiro, F. Schüssler, A. Stamerra, G. Stratta, S. Vergani</i>	
CALIBRATION AND MONITORING OF THE ASTRI-HORN TELESCOPE BY USING THE NIGHT-SKY BACKGROUND MEASURED BY THE PHOTON-STATISTICS ("VARIANCE") METHOD.....	4727
<i>A. Segreto, O. Catalano, M.C. Maccarone, T. Mineo, A. La Barbera</i>	
PERFORMANCE OF AIR SHOWER ARRAY WITH SURFACE WATER CHERENKOV DETECTORS.....	4736
<i>A. Shiomi</i>	
USAGE OF THE ESTIMATION OF THE HEIGHT OF THE FIRST INTERACTION.....	4738
<i>J. Sitarek, D. Sobczynska, K. Adamczyk, M. Szanecki, K. Bernlöhr</i>	
V-SHAPED CHERENKOV IMAGES OF MAGNETICALLY-SEPARATED GAMMA-RAYS	4746
<i>J. Sitarek, D. Sobczynska, K. Adamczyk, M. Szanecki</i>	
FACT - MULTI-WAVELENGTH ANALYSIS OF MORE THAN 30 FLARES OF MRK 421	4754
<i>V. Sliusar, A. Arbet-Engels, D. Baack, M. Balbo, A. Biland, M. Blank, T. Bretz, K. Bruegge, M. Bulinski, J. Buss, M. Doerr, D. Dorner, D. Elsaesser, D. Hildebrand, K. Mannheim, S. Mueller, D. Neise, M. Noethe, A. Paravac, W. Rhode, B. Schleicher, K. Sedlaczek, A. Shukla, R. Walter, E. von Willert</i>	
A SYSTEMATIC SEARCH FOR TEV HALOS ASSOCIATED WITH KNOWN PULSARS	4762
<i>A. Smith</i>	
PROSPECTS FOR THE USE OF PHOTOSENSOR TIMING INFORMATION WITH MACHINE LEARNING TECHNIQUES IN BACKGROUND REJECTION.	4771
<i>S.T. Spencer, T. Armstrong, J.J. Watson, G. Cotter</i>	
DETECTION OF SUB-100 GEV γ -RAY PULSATIONS FROM PSR B1706-44 WITH H.E.S.S.	4779
<i>M. Spir-Jacob, A. Djannati-Ataï, L. Mohrmann, G. Giavitto, B. Khelifi, B. Rudak, C. Venter, R. Zanin</i>	

THE CHERENKOV TRANSPARENCY COEFFICIENT FOR THE ATMOSPHERIC MONITORING AND ARRAY CALIBRATION AT THE CHERENKOV TELESCOPE ARRAY SOUTH.....	4786
<i>S. Stefanik, D. Nosek</i>	
THE MAGIC SUM-TRIGGER-II SYSTEM	4794
<i>D. Strom</i>	
NOVEL SIGNALS FROM NEUTRON STAR MERGERS AT 511 KEV	4797
<i>V. Takhistov</i>	
SEARCH FOR PRIMORDIAL BLACK HOLE EVAPORATIONS WITH H.E.S.S.	4804
<i>T. Tavernier, J.F. Glicenstein, F. Brun</i>	
STATUS AND PERFORMANCE RESULTS FROM NECTARCAM -- A CAMERA FOR CTA MEDIUM SIZED TELESCOPES.....	4812
<i>T. Tavernier, J.F. Glicenstein, F. Brun</i>	
CAMERA DESIGN AND PERFORMANCE OF THE PROTOTYPE SCHWARZSCHILD- COUDER TELESCOPE FOR THE CHERENKOV TELESCOPE ARRAY	4820
<i>L. Taylor</i>	
CARPET RESULTS ON ASTROPHYSICAL GAMMA RAYS ABOVE 100 TEV	4829
<i>S. Troitsky, D. Dzhappuev, Y. Zhezher</i>	
STUDY OF MIDDLE-AGED PULSAR WIND NEBULAE SHOWING LARGE OFFSETS BETWEEN THEIR PULSAR AND THEIR VHE GAMMA-RAY EMISSION	4835
<i>M. Tsirou, Z. Meliani, Y. Gallant</i>	
DEVELOPMENT AND OPERATIONS OF INFN OPTICAL MODULES FOR THE SCT TELESCOPE CAMERA PROPOSED FOR THE CHERENKOV TELESCOPE ARRAY OBSERVATORY	4843
<i>L. Tosti</i>	
APPLYING MONTE CARLO METHODS TO MODEL MULTI-WAVELENGTH EMISSION OF RMHD JET SIMULATIONS.....	4851
<i>I. van der Westhuizen, B. van Soelen, M. Böttcher, P. Meintjes</i>	
SEARCHING FOR VARIABILITY OF THE CRAB NEBULA FLUX AT TEV ENERGIES USING MAGIC VERY LARGE ZENITH ANGLE OBSERVATIONS.....	4858
<i>J. van Scherpenberg, R. Mirzoyan, I. Vovk, M. Peresano, D. Zaric, P. Temnikov, N. Godinović, J. Besenrieder</i>	
RAMAN LIDARS FOR THE ATMOSPHERIC CALIBRATION ALONG THE LINE-OF-SIGHT OF THE CHERENKOV TELESCOPE ARRAY	4863
<i>G. Vasileiadis</i>	
SHEDDING (GAMMA) LIGHT ON THE COSMIC RAY POPULATION IN THE GALACTIC CENTER REGION	4871
<i>S. Ventura, D. Grasso, A. Marinelli</i>	
THE CHERENKOV TELESCOPE ARRAY VIEW OF THE GALACTIC CENTER REGION	4878
<i>A. Viana, S. Ventura, D. Gaggero, D. Grasso, D. Malyshev, K. Kosack, S. Funk, A. D'Ai, R. Blackwell, A. Burtovoi, M. Chernyakova, M.D. Filipovic, M. Fiori, G. Rowell, A. Rugliancich, O. Sergijenko, L. Zampieri, R. Alves Batista, P. Caraveo, E.M. de Gouveia Dal Pino, E. de Oña Wilhelmi, I. Minaya, J.C. Rodríguez-Ramírez, P. Da Vela, G. De Cesare, F.t. CTA Consortium</i>	

GAMMA HADRON SEPARATION USING TRADITIONAL SINGLE PARAMETER METHOD AND MULTIVARIATE ALGORITHMS WITH LHAASO-WCDA EXPERIMENT	4881
<i>X. Wang</i>	

COMMISSIONING AND PERFORMANCE OF CHEC-S – A COMPACT HIGH-ENERGY CAMERA FOR THE CHERENKOV TELESCOPE ARRAY	4888
<i>J.J. Watson, J. Zorn</i>	

VOLUME 8

INVESTIGATING THE UNUSUALLY HARD GAMMA-RAY SPECTRUM OF THE EXTREME BLAZAR 1ES 0229+200 WITH HAWC	4896
<i>T. Weisgarber</i>	

NOVEL BACK-COATED GLASS MIRRORS FOR THE MAGIC TELESCOPES.....	4902
<i>M. Will, R. Mirzoyan, J. van Scherpenberg, M. Garczarczyk</i>	

X-RAY AND TEV γ -RAY EMISSION FROM THE 50-YEAR PERIOD BINARY SYSTEM PSR J2032+4127/MT91 213	4910
<i>T. Williamson</i>	

MAGIC OBSERVATIONS OF DRAGONFLY NEBULA AT TEV ENERGIES USING THE VERY LARGE ZENITH ANGLE TECHNIQUE	4918
<i>D. Zaric, R. Mirzoyan, I. Vovk, P. Temnikov, M. Peresano, N. Godinović, J. van Scherpenberg, J. Besenrieder</i>	

NOVEL VERY LARGE ZENITH ANGLE OBSERVATION TECHNIQUE PERFORMED BY THE MAGIC TELESCOPES.....	4923
<i>I. Vovk, M. Will, R. Mirzoyan, J. Besenrieder, M. Peresano, P. Temnikov, J. van Scherpenberg, D. Zaric</i>	

POINTING SYSTEM FOR THE LARGE SIZE TELESCOPES PROTOTYPE OF THE CHERENKOV TELESCOPE ARRAY	4924
<i>D. Zaric, S. Cikota, A. Fiasson, N. Godinović, K. Noda, R. Wagner, M. Will, Q. Piel</i>	

A REAL-TIME MONITORING THE TEV BLAZARS WITH LHAASO-WCDA DETECTOR.....	4932
<i>M. Zha, G. Xiang, Y. Xing, J. Zhou, X. Wang</i>	

ON-SITE TEST SYSTEM FOR LHAASO-KM2A MUON DETECTOR.....	4940
<i>S. Zhao, Y. Zhang, G. Xiao, H. Dai, G. Xin, X. Zuo, Z. Li, C. Li, L. Wang, H. Wang, N. Cheng</i>	

PROBING PARTICLE DIFFUSION AROUND TWO NEARBY PULSARS WITH TEV GAMMA-RAY OBSERVATIONS FROM HAWC	4948
<i>H. Zhou</i>	

SENSITIVITY IMPROVEMENTS OF VERY-HIGH-ENERGY γ -RAY DETECTION WITH THE UPGRADED H.E.S.S. I CAMERAS USING FULL WAVEFORM PROCESSING	4955
<i>J. Zorn</i>	

THE IMPACT OF THE CIRCUMSTELLAR MAGNETIC FIELD OF PROGENITOR STARS ON THE RESULTING GAMMA-RAY SPECTRUM FROM SUPERNOVA REMNANTS	4963
<i>I. Sushch, R. Brose, M. Pohl</i>	

NU - NEUTRINO

CORRELATION OF HIGH ENERGY NEUTRINOS AND GAMMA RAYS ON THE DIRECTION OF FERMI BUBBLES	4972
<i>P. Alvarez Hurtado, N. Fraija, A. Galván, A. Marinelli</i>	
SEARCHES FOR CONNECTIONS BETWEEN DARK MATTER AND NEUTRINOS WITH THE ICECUBE HIGH-ENERGY STARTING EVENT SAMPLE.....	4980
<i>C. Arguelles, H. Dujmovic</i>	
ANTARES SEARCH FOR POINT SOURCES OF NEUTRINOS WITH 11 YR OF DATA: A LIKELIHOOD STACKING ANALYSIS.....	4986
<i>J. Aublin</i>	
AMON: TEV GAMMA AND NEUTRINO COINCIDENCE ALERTS FROM HAWC AND ICECUBE SUBTHRESHOLD DATA.....	4994
<i>H. Ayala</i>	
SEARCH FOR CORRELATIONS OF HIGH-ENERGY NEUTRINOS AND ULTRA-HIGH ENERGY COSMIC RAYS.....	5001
<i>A.M. Barbano</i>	
MEASUREMENT OF THE RADIO-FREQUENCY ICE DIELECTRIC PERMITTIVITY AND IMPLICATIONS FOR NEUTRINO RECONSTRUCTION	5009
<i>U.A. Latif, T. Jordan, A. Schultz</i>	
THE CONTROL UNIT OF KM3NET DETECTORS.....	5017
<i>C. Bozza, T. Chiarusi, R. Bruijn</i>	
SEARCH FOR HIGH-ENERGY NEUTRINOS FROM AGN CORES	5025
<i>F. Bradascio</i>	
AN IMPROVED MUON TRACK RECONSTRUCTION FOR ICECUBE	5033
<i>F. Bradascio, T. Gluesenkamp</i>	
DESIGN AND PERFORMANCE OF A UV-CALIBRATION DEVICE FOR THE SPICECORE HOLE	5040
<i>J. Brostean-Kaiser</i>	
READOUT AND TRIGGER SYSTEM OF THE KM3NET DETECTORS.....	5048
<i>R. Bruijn, T. Chiarusi</i>	
FUNDAMENTAL PHYSICS WITH HIGH-ENERGY ASTROPHYSICAL NEUTRINOS TODAY AND IN THE FUTURE.....	5056
<i>M. Bustamante, C. Arguelles, A. Kheirandish, S. Palomares-Ruiz, J. Salvado, A. Vincent</i>	
ALL SKY TIME-INTEGRATED POINT SOURCE SEARCHES USING 10 YEARS OF ICECUBE DATA.....	5064
<i>T. Carver</i>	
A CATALOG OF ASTROPHYSICAL NEUTRINO CANDIDATES FOR ICECUBE	5072
<i>C. Chen, C. Cardot</i>	
LIGHT DIFFUSION IN BIREFRINGENT POLYCRYSTALS AND THE ICECUBE ICE ANISOTROPY.....	5080
<i>D. Chirkin, M. Rongen</i>	

A MULTI-PMT OPTICAL MODULE FOR THE ICECUBE UPGRADE	5088
<i>L. Classen, C. Dorn, A. Kappes, T. Karg, M. Kossatz, A. Kretzschmann, H.W. Ortjohann, J. Reubelt, K.H. Sulanke, R. Weigel</i>	
SEARCH FOR NEUTRINO COUNTERPARTS OF CATALOGED GW EVENTS FROM RUN O2 AND OFFLINE FOLLOW-UP OF NEW GW ALERTS FROM RUN O3 WITH ANTARES	5096
<i>M. Colomer Molla</i>	
OFFLINE PERFORMANCE STUDIES AND FIRST REAL-TIME RESULTS ON CCSN NEUTRINOS SEARCHES WITH THE KM3NET NEUTRINO DETECTORS.....	5103
<i>M. Colomer Molla</i>	
RECENT RESULTS FROM THE ASKARYAN RADIO ARRAY	5111
<i>A. Connolly</i>	
ICECUBE SEARCH FOR HIGH-ENERGY NEUTRINOS PRODUCED IN THE PRECURSOR STAGES OF GAMMA-RAY BURSTS	5119
<i>P. Coppin, N. van Eijndhoven</i>	
INVESTIGATION OF ULTRA-LUMINOUS INFRARED GALAXIES AS OBSCURED HIGH- ENERGY NEUTRINO SOURCE CANDIDATES	5127
<i>P. Correa, K. de Vries, N. van Eijndhoven</i>	
SENSITIVITY TO ATYPICAL TAU INITIATED AIR SHOWERS FOR A HIGH-ALTITUDE OPTICAL CHERENKOV DETECTOR.....	5135
<i>A. Cummings, R. Aloisio, M.E. Bertaina, F. Bisconti, F. Fenu, F. Salamida</i>	
A MORE COMPLETE PHENOMENOLOGY OF TAU LEPTON INDUCED AIR SHOWERS.....	5143
<i>A. Cummings, R. Aloisio, M.E. Bertaina, F. Bisconti, F. Fenu, F. Salamida</i>	
NEUTRINOS FROM PRIMORDIAL BLACK HOLE BURSTS	5151
<i>P. Dave, I. Taboada</i>	
PROBING NEUTRINO EMISSION AT GEV ENERGIES FROM COMPACT BINARY MERGERS WITH ICECUBE.....	5158
<i>G. De Wasseige, I. Bartos, K. de Vries, E. O'Sullivan</i>	
SEARCHES FOR ULTRA-HIGH-ENERGY NEUTRINOS WITH ANITA.....	5166
<i>C. Deaconu</i>	
KM3NET TIME CALIBRATION	5174
<i>R. Coniglione, A. Creusot, I. Di Palma, D. Guderian, J. Hofstaedt, G. Riccobene, A. Sánchez-Losa</i>	
SEARCH FOR STERILE NEUTRINOS WITH KM3NET/ORCA.....	5182
<i>A. Domi, J. Coelho</i>	
TEN YEARS OF MULTI-WAVELENGTH FOLLOW-UP OBSERVATIONS OF ANTARES NEUTRINO ALERTS.....	5190
<i>D. Dornic, M. Ageron, V. Bertin, J. Brunner, A. Coleiro, F. Schüssler, D. Turpin, B. Vallage</i>	
REAL-TIME FOLLOW-UP OF MULTI-MESSENGER ALERTS WITH THE ANTARES NEUTRINO TELESCOPE	5198
<i>D. Dornic, A. Coleiro, M. Colomer-Molla, A. Kouchner, T. Pradier</i>	
THE BAIKAL-GVD NEUTRINO TELESCOPE: CASCADE EVENTS RESULTS.....	5206
<i>R. Dvornicky, Z.A.M. Dzhilkibaev</i>	

DATA QUALITY MONITORING SYSTEM IN THE BAIKAL-GVD EXPERIMENT	5214
<i>R. Dvornicky</i>	
THE OPTICAL NOISE MONITORING SYSTEMS OF THE LAKE BAIKAL ENVIRONMENT FOR THE BAIKAL-GVD TELESCOPE	5222
<i>R. Dvornicky</i>	
THE INTER-CLUSTER TIME SYNCHRONIZATION SYSTEMS WITHIN THE BAIKAL-GVD DETECTOR	5229
<i>K. Golubkov, L. Fajt</i>	
THE BAIKAL-GVD DETECTOR CALIBRATIONS	5236
<i>L. Fajt, Z.A.M. Dzhilkibaev, M.D. Shelepov</i>	
QUEST FOR NEW PHYSICS USING ASTROPHYSICAL NEUTRINO FLAVOUR IN ICECUBE	5244
<i>K. Farrag, C. Arguelles, T. Katori, S. Mandalia</i>	
CALIBRATION OF ATMOSPHERIC NEUTRINO FLUX CALCULATIONS USING COSMIC MUON FLUX AND CHARGE RATIO MEASUREMENTS	5252
<i>J.P. Yáñez, A. Fedynitch</i>	
CONSTRAINTS ON LIGHT MESON PRODUCTION IN AIR-SHOWERS WITH ATMOSPHERIC NEUTRINOS BELOW 1 TEV INTERACTING IN ICECUBE'S DEEPCORE	5260
<i>A. Fedynitch, J.P. Yáñez</i>	
THE PROS AND CONS OF BEYOND STANDARD MODEL INTERPRETATIONS OF ANITA EVENTS	5268
<i>L.A. Anchordoqui, I. Antoniadis, V. Barger, F. Cornet, C. Garcia Canal, M. Gutiérrez, J.I. Illana, J.G. Learned, D. Marfatia, M. Masip, S. Pakvasa, S. Palomares-Ruiz, J. Fernández Soriano, T.J. Weiler</i>	
SIDR EXPERIMENT: NEW RESULTS AND NEW EQUIPMENT	5275
<i>G. Bashindzhagyan, E. Fischbach, V. Barnes, G. Garipov, G. Hovsepyan, N. Korotkova, L. Poghosyan, N. Sinev</i>	
SYNERGY BETWEEN ART AND SCIENCE: COLLABORATION AT THE SOUTH POLE.	5279
<i>D. Fortescue, G. De Wasseige</i>	
SUBLUMINAL MAGNETIC MONOPOLE SEARCH WITH NOVA	5287
<i>M. Frank, A. Antoshkin, C. Dukes, R. Ehrlich, E. Song</i>	
ELEVEN YEAR SEARCH FOR SUPERNOVAE WITH THE ICECUBE NEUTRINO OBSERVATORY	5295
<i>A. Fritz, R. Cross, S. Griswold</i>	
STRAW: STRINGS FOR ABSORPTION LENGTH IN WATER	5303
<i>C. Fruck, I.C. Rea</i>	
STUDY OF THE HIGH-ENERGY NEUTRINO DIFFUSE FLUX WITH THE ANTARES NEUTRINO TELESCOPE	5312
<i>L.A. Fusco, F. Versari</i>	
SEARCH FOR NEUTRINOS FROM LOCAL SUPERBUBBLES WITH THE ANTARES NEUTRINO TELESCOPE	5320
<i>L.A. Fusco</i>	

PRECISION OF ANALYTICAL APPROXIMATIONS IN CALCULATIONS OF ATMOSPHERIC LEPTONS	5328
<i>T. Gaisser, D. Soldin, A. Fedynitch, A. Crossman</i>	
SEASONAL VARIATION OF ATMOSPHERIC MUONS IN ICECUBE.....	5336
<i>T. Gaisser, S. Tilav, D. Soldin, P. Desiati</i>	
HIGH-ENERGY NEUTRINO EVENT SIMULATION AT NLO IN GENIE FOR KM3NET AND OTHER OBSERVATORIES	5344
<i>A. Garcia, A. Heijboer</i>	
NURADIOMC - SIMULATION CODE FOR THE NEXT GENERATION OF RADIO NEUTRINO DETECTORS.....	5352
<i>D. García-Fernández, C. Glaser, A. Nelles, J. Alvarez-Muñiz, S.W. Barwick, D.Z. Besson, S. Buitink, B.A. Clark, A. Connolly, C. Deaconu, K. de Vries, J.C. Hanson, B. Hokanson-Fasig, S.A. Kleinfelder, R. Lahmann, U.A. Latif, C. Persichilli, Y. Pan, C. Pfender, I. Plaisier, D. Seckel, J. Torres, S. Toscano, N. van Eijndhoven, A.G. Vieregge, C. Welling, T. Wichen, S.A. Wissel</i>	
NEW RESULTS ON ANGULAR RECONSTRUCTION OF DEEP PULSER RADIO SIGNALS.....	5360
<i>G. Gaswint</i>	
THE AUTOMATIC INSTALLATION AND CONFIGURATION PROCEDURE FOR THE DATA ACQUISITION SYSTEM OF KM3NET.	5368
<i>E. Giorgio, T. Chiarusi, R. Bruijn</i>	
NEUTRINO DIRECTION AND ENERGY RESOLUTION OF ASKARYAN DETECTORS.....	5376
<i>C. Glaser</i>	
NURADIORECO: A NEW RECONSTRUCTION FRAMEWORK FOR RADIO NEUTRINO DETECTORS.....	5384
<i>C. Glaser, A. Nelles, I. Plaisier, C. Welling, S.W. Barwick, D. García-Fernández, G. Gaswint, R. Lahmann, C. Persichilli</i>	
LOW ENERGY NEUTRINOS FROM STOPPED MUONS IN THE EARTH	5392
<i>W.L. Guo</i>	
SEARCH FOR ASTRONOMICAL NEUTRINO FROM BLAZAR TXS0506+056 IN SUPER- KAMIOKANDE	5400
<i>K. Hagiwara</i>	
MACHINE LEARNING FOR KM3NET/ORCA	5407
<i>S. Hallmann, M. Moser, S. Reck, T. Eberl</i>	
DEVELOPMENT OF SUPER-KAMIOKANDE DETECTOR SIMULATION BASED ON GEANT4	5415
<i>M. Harada</i>	
THE POCAM AS SELF-CALIBRATING LIGHT SOURCE FOR THE ICECUBE UPGRADE.....	5423
<i>C. Fruck, F. Henningsen, C. Spannfellner</i>	
MUON ENERGY RECONSTRUCTION FOR NEUTRINO DETECTORS WITH EDEPILLIM.....	5431
<i>G. Hill, S. Robertson</i>	
ATMOSPHERIC NEUTRINOS DETECTED WITH THE FIRST KM3NET DETECTION UNITS OF ARCA AND ORCA	5439
<i>J. Hofestädt, R. Coniglione, A. Sinopoulou, E. Tzamariudaki, D. Zaborov</i>	

SUPER-ORCA: MEASURING THE LEPTONIC CP-PHASE WITH ATMOSPHERIC NEUTRINOS AND BEAM NEUTRINOS.....	5447
<i>J. Hofestädt, M. Bruchner, T. Eberl</i>	
MODEL-INDEPENDENT MEASUREMENT OF THE ATMOSPHERIC MUON NEUTRINO ENERGY SPECTRUM UP TO 2.5 PEV	5455
<i>J. Soedingrekso, T. Hoinka, M. Börner</i>	
DESIGN STUDIES FOR THE RADIO NEUTRINO OBSERVATORY (RNO)	5463
<i>B. Hokanson-Fasig</i>	
ON THE REDUCTION OF THE ERROR IN THE CALCULATION OF LOW ENERGY (<1GEV) ATMOSPHERIC NEUTRINO FLUX	5471
<i>M. Honda</i>	
SEARCHES FOR STEADY NEUTRINO EMISSION FROM 3FHL BLAZARS USING EIGHT YEARS OF ICECUBE DATA FROM THE NORTHERN HEMISPHERE	5480
<i>M. Huber</i>	
TOWARDS INTERFEROMETRIC TRIGGERING ON AIR SHOWERS INDUCED BY TAU NEUTRINO INTERACTIONS.....	5488
<i>K. Hughes, J. Alvarez-Muniz, A. Cummings, W.C. Jr., C. Deaconu, G. Hallinan, A. Ludwig, E. Oberla, A. Rodriguez, C. Paciaroni, A. Romero-Wolf, H. Schoorlemmer, D. Southall, B. Strutt, M. Vasquez, A.G. Viereg, S. Wissel, E. Zas</i>	
A SEARCH FOR ICECUBE NEUTRINOS FROM THE FIRST 33 DETECTED GRAVITATIONAL WAVE EVENTS	5496
<i>R. Hussain, J. Vandenbroucke, J. Wood</i>	
ANTARES AND ICECUBE COMBINED SEARCH FOR NEUTRINO POINT-LIKE AND EXTENDED SOURCES IN THE SOUTHERN SKY	5504
<i>G. Illuminati</i>	
SEARCHES FOR POINT-LIKE SOURCES OF COSMIC NEUTRINOS WITH 11 YEARS OF ANTARES DATA	5512
<i>G. Illuminati, J. Aublin, S. Navas</i>	
CALIBRATION LEDS IN THE ICECUBE UPGRADE DEGG MODULES	5521
<i>A. Ishihara, A. Kiriki</i>	
STATUS AND PROSPECTS OF THE HYPER-KAMIOKANDE PROJECT	5529
<i>Y. Itow</i>	
THE SPICECORE HOLE CAMERA SYSTEM.....	5537
<i>M. Jeong</i>	
COMPARISON OF THE MEASURED ATMOSPHERIC MUON FLUX WITH MONTE CARLO SIMULATIONS FOR THE FIRST KM3NET DETECTION UNITS.....	5545
<i>P. Kalaczyński, R. Coniglione</i>	
THE CAMERA SYSTEM FOR THE ICECUBE UPGRADE	5552
<i>W. Kang, C. Tönnis, C. Rott</i>	
SEARCH FOR NEUTRINO EMISSION IN ICECUBE'S ARCHIVAL DATA FROM THE DIRECTION OF ICECUBE ALERT EVENTS	5560
<i>M. Karl</i>	

MULTI-MESSENGER GRAVITATIONAL-WAVE + HIGH-ENERGY NEUTRINO SEARCHES WITH LIGO, VIRGO AND ICECUBE.....	5566
<i>A. Keivani, D. Veske, S. Countryman, I. Bartos, K.R. Corely, Z. Marka, S. Marka</i>	
SENSITIVITY TO NON-STANDARD INTERACTIONS (NSI) WITH KM3NET-ORCA	5574
<i>N.R. Khan Chowdhury, T. Thakore, J.A.B. Coelho, J.D.D. Zornoza, S. Navas</i>	
ICECUBE SEARCH FOR GALACTIC NEUTRINO SOURCES BASED ON HAWC OBSERVATIONS OF THE GALACTIC PLANE.....	5582
<i>A. Kheirandish, J. Wood</i>	

VOLUME 9

ARRIVAL DIRECTION RECONSTRUCTION OF ULTRA-HIGH-ENERGY NEUTRINOS WITH ARA	5590
<i>M. Kim, S. Archambault, K. Mase, S. Yoshida, A. Ishihara</i>	
SENSITIVITY FOR ASTROPHYSICAL NEUTRINO SEARCHES WITH KM3NET-ORCA	5598
<i>G. De Wasseige, A. Kouchner, M. Colomer Molla, D. Dornic, S. Hallmann</i>	
CALORIMETRIC NEUTRINO EXPECTATIONS FROM BRIGHT BLAZAR FLARES.....	5605
<i>M. Kreter, M. Kadler, F. Krauss, S. Buson, R. Ojha, K. Mannheim, J. Wilms, M. Böttcher</i>	
VSPACESIM: A COMPREHENSIVE NEUTRINO SIMULATION PACKAGE FOR SPACE- BASED & SUBORBITAL EXPERIMENTS	5613
<i>J.F. Krizmanic, Y. Akaike, D. Bergman, J. Eser, S. Patel, A. Romero-Wolf, M. Hall-Reno, F. Sarazin, T. Venters, L.A. Anchordoqui, S. Mackovjak, A. Olinto, L. Wiencke, S. Wissel, A. Reustle</i>	
APPLICATION OF DEEP NEURAL NETWORKS TO EVENT TYPE CLASSIFICATION IN ICECUBE.....	5621
<i>M. Kronmueller, T. Glauch</i>	
INVESTIGATIONS OF ICE AND EMITTER PROPERTIES FROM RADIO SIGNALS RECORDED WITH ARIANNA.....	5629
<i>R. Lahmann</i>	
PROSPECTS OF EARTH-SKIMMING NEUTRINO DETECTION WITH HAWC	2637
<i>H. Leon Vargas</i>	
DEPENDENCE OF THE ATMOSPHERIC MUON RATE ON THE SEA WATER DEPTH WITH FIRST KM3NET DATA.....	5645
<i>M. Lincetto, S. Biagi, R. Coniglione, J. Hofestädt, V. Kulikovskiy, K. Melis, D. Samtleben</i>	
SEARCHING FOR HIGH-ENERGY NEUTRINO EMISSION FROM TEV PULSAR WIND NEBULAE	5653
<i>Q. Liu, A. Kheirandish</i>	
A NOVEL METHOD OF REJECTING MUON BACKGROUNDS FOR THE DETECTION OF THE HIGHEST ENERGY NEUTRINOS.....	5659
<i>L. Lu</i>	
DEVELOPMENT OF NEW LIQUID SCINTILLATORS FOR NEUTRINO EXPERIMENTS OF NEXT GENERATION.....	5667
<i>S. Lubsandorzhev</i>	

IMITATORS OF CHERENKOV AND SCINTILLATION LIGHT PULSES BASED ON FAST LEDS.....	5675
<i>S. Lubsandorzhiev</i>	
DEVELOPMENT OF MEDIUM AND SMALL SIZE PHOTOMULTIPLIERS FOR EXPERIMENTS IN NEUTRINO PHYSICS.....	5683
<i>S. Lubsandorzhiev</i>	
NEUTRINOS FROM TIDAL DISRUPTION EVENTS	5691
<i>C. Lunardini</i>	
A METHOD FOR AN UNTRIGGERED, TIME-DEPENDENT, SOURCE-STACKING SEARCH FOR NEUTRINO FLARES	5699
<i>W. Luszczak, J. Braun, A. Karle</i>	
CAPTURING COSMIC RAY RESEARCH AND RESEARCHERS WITH ART	5707
<i>J. Madsen, F. Abdu'Allah, M.D. Hosale, M. Ladoni</i>	
MAGIC AS A HIGH-ENERGY ν_T DETECTOR: PERFORMANCE STUDY TO FOLLOW-UP ICECUBE TRANSIENT EVENTS.....	5714
<i>M. Mallamaci, D. Gora, E. Bernardini</i>	
NEUTRINO SOURCE SEARCHES AND A REALTIME NEUTRINO ALERT STREAM IN THE SOUTHERN SKY WITH ICECUBE STARTING TRACKS	5722
<i>S. Mancina, M. Silva</i>	
SENSITIVITY OF KM3NET-ARCA DETECTOR TO GLASHOW RESONANCE OBSERVATION.....	5730
<i>J. Manczak</i>	
KM3NET/ARCA EXPECTATIONS FOR THE LOW LATITUDE BUBBLES	5737
<i>A. Marinelli, R. Coniglione, A. Sharma</i>	
SUPERK-GD: THE GD FUTURE OF SUPER-KAMIOKANDE.....	5745
<i>L. Marti-Magro</i>	
THE GIANT RADIO ARRAY FOR NEUTRINO DETECTION	5753
<i>O. Martineau</i>	
EXPLORING THE ASSUMPTION OF HADRON-HADRON COLLISIONS FOR HIGH ENERGY NEUTRINO PRODUCTION	5761
<i>C. Mascaretti, F. Vissani</i>	
SEARCH FOR ASTROPHYSICAL TAU NEUTRINOS WITH AN IMPROVED DOUBLE PULSE METHOD.....	5769
<i>M. Meier, J. Soedingrekso</i>	
ATMOSPHERIC MUONS FROM ELECTROMAGNETIC CASCADES	5777
<i>S. Meighen-Berger, M. Li</i>	
ANGULAR DISTRIBUTION OF PROMPT NEUTRINOS IN EXTENSIVE AIR SHOWERS	5785
<i>M.A. Muller, V.P. Gonçalves</i>	
MULTI-MESSENGER CONNECTIONS AMONG HIGH-ENERGY COSMIC PARTICLES.....	5792
<i>K. Murase</i>	

ELECTRONICS DEVELOPMENT FOR THE NEW PHOTO-DETECTORS (PDOM AND D-EGG) FOR ICECUBE-UPGRADE.....	5801
<i>R. Nagai, A. Ishihara</i>	
HIGH-ELEVATION SYNOPTIC RADIO ARRAY FOR DETECTION OF UPWARD MOVING AIR-SHOWERS, DEPLOYED IN THE ANTARCTIC MOUNTAINS	5809
<i>J. Nam, P. Chen, Y.C. Chen, S.Y. Hsu, J.J. Huang, M.H.A. Huang, C.Y. Kuo, C.H. Leung, T.C. Liu, B.K. Shin, Y.S. Shiao, M.Z. Wang, S.H. Wang, Y.H. Wang, D. J. Besson, C. Hornhuber, A. Novikov</i>	
A WIND-TURBINE FOR AUTONOMOUS STATIONS FOR RADIO DETECTION OF NEUTRINOS	5817
<i>A. Nelles</i>	
OBSERVATION OF OPTICAL TRANSIENTS AND SEARCH FOR PEV-EEV TAU NEUTRINOS WITH ASHRA-1	5825
<i>S. Ogawa</i>	
HIGH-ENERGY NEUTRINOS FROM INDIVIDUAL BLAZAR FLARES.....	5833
<i>F. Oikonomou, K. Murase, P. Padovani, E. Resconi, P. Meszaros</i>	
ICECUBE AS A MULTI-MESSENGER FOLLOW-UP OBSERVATORY FOR ASTROPHYSICAL TRANSIENTS	5841
<i>J. Vandenbroucke</i>	
ANTARES SEARCH FOR HIGH-ENERGY NEUTRINOS FROM TEV-EMITTING BLAZARS, MARKARIAN 421 AND 501, IN COINCIDENCE WITH HAWC GAMMA-RAY FLARES	5849
<i>M. Organokov, T. Pradier</i>	
SEARCHING FOR TIME-DEPENDENT NEUTRINO EMISSION FROM BLAZARS.....	5857
<i>E. O'Sullivan, C. Finley</i>	
SUPERNOVA NEUTRINOS IN HYPER-KAMIOKANDE.....	5865
<i>E. O'Sullivan</i>	
USING SNOWGLOBES TO CALCULATE SUPERNOVA NEUTRINO DETECTION RATES IN ICECUBE.....	5871
<i>F. Malmenbeck, E. O'Sullivan</i>	
TRINITY: AN AIR-Shower IMAGING SYSTEM FOR THE DETECTION OF ULTRAHIGH ENERGY NEUTRINOS	5879
<i>A.N. Otte, A.M. Brown, A.D. Falcone, M. Mariotti, I. Taboada</i>	
DEVELOPMENT OF A CHERENKOV TELESCOPE FOR THE DETECTION OF ULTRA-HIGH ENERGY NEUTRINOS WITH EUSO-SPB2 AND POEMMA	5887
<i>A.N. Otte, E. Gazda, E. Judd, J.F. Krizmanic, E. Kutzenzov, O.R. Matamala, P.J. Reardon, L. Wiencke</i>	
BOUNDS ON DIFFUSE AND POINT SOURCE FLUXES OF ULTRA-HIGH ENERGY NEUTRINOS WITH THE PIERRE AUGER OBSERVATORY	5895
<i>F. Pedreira</i>	
PERFORMANCE OF THE ARIANNA PILOT ARRAY, AND IMPLICATIONS FOR THE NEXT GENERATION OF UHE NEUTRINO DETECTORS	5903
<i>C. Persichilli</i>	

A SEARCH FOR COUNTERPARTS TO ANITA NEUTRINO CANDIDATES WITH ICECUBE	5911
<i>T. Montaruli, J. Vandenbroucke, A. Pizzuto, A.M. Barbano</i>	
SEARCHES FOR NEUTRINOS FROM FAST RADIO BURSTS WITH ICECUBE.....	5919
<i>J. Vandenbroucke, A. Kheirandish, A. Pizzuto</i>	
ENABLING A NEW DETECTION CHANNEL FOR BSM PHYSICS WITH IN-SITU MEASUREMENTS OF LUMINESCENCE.....	5927
<i>A. Pollmann</i>	
SEARCHES FOR "SUBTHRESHOLD" SOURCES OF GRAVITATIONAL WAVES AND HIGH ENERGY NEUTRINOS USING ADVANCED LIGO/VIRGO, ICECUBE AND ANTARES DATA	5935
<i>T. Pradier, M. Colomer, B. Baret</i>	
COHERENT RADAR REFLECTIONS FROM AN ELECTRON-BEAM INDUCED PARTICLE CASCADE	5943
<i>S. Prohira, K.D. Vries, D. Besson, A. Connolly, S. Wissel, D. Saltzberg, T. Meures, P. Allison, X. Zuo, J. Ralston, Z. Riesen, J. Nam, U.A. Latif, J. Torres, A. Nozdrina, J. Beatty, S. Toscano, N.V. Eijndhoven, C. Sbrocco</i>	
REVISITING CONSTRAINTS ON STERILE NEUTRINO MIXING PARAMETERS USING ICECUBE ATMOSPHERIC NEUTRINO DATA.....	5951
<i>S. Razzaque, L.S. Miranda</i>	
CONSTRAINING THE ENVIRONMENT OF NEUTRINO-EMITTING REGIONS IN JETS OF FSRQS.....	5959
<i>A. Reimer, M. Boettcher, S. Buson, D. Miceli</i>	
A NEW CALCULATION OF EARTH-SKIMMING VERY- AND ULTRA-HIGH ENERGY TAU NEUTRINOS	5967
<i>M.H. Reno, T. Venters, J.F. Krizmanic, L.A. Anchordoqui, C. Guépin, A.V. Olinto</i>	
MEASUREMENT OF THE MULTI-TEV NEUTRINO CROSS SECTION WITH ICECUBE USING EARTH ABSORPTION.....	5975
<i>S. Robertson</i>	
NEUTRINOS AND UHECR NUCLEI FROM BLAZARS: FROM A SINGLE-SOURCE MODEL TO A POPULATION STUDY.....	5981
<i>X. Rodrigues, A. Fedynitch, S. Gao, A. Palladino, D. Boncioli, W. Winter</i>	
EVOLVING ANTENNAS FOR ULTRA-HIGH ENERGY NEUTRINO DETECTION	5989
<i>J.A. Rolla</i>	
CONCEPT AND ANALYSIS FOR A 1 – 100 PEV TAU NEUTRINO OBSERVATORY	5998
<i>A. Romero-Wolf, W. Carvalho, J. Alvarez-Muniz, J. Bazo, J. Bellido, A. Cummings, A. Gago, H. Schoorlemmer, S. Wissel, E. Zas</i>	
CONSTRAINING ANOMALOUS EEV ANITA DETECTIONS WITH PEV NEUTRINOS.....	6006
<i>I. Safa, A. Pizzuto, C. Argüelles, F. Halzen, R. Hussain, A. Kheirandish, J. Vandenbroucke</i>	
TIME-DEPENDENT SENSITIVITY AND DISCOVERY POTENTIAL OF KM3NET-ARCA DETECTOR	6014
<i>A. Sharma, A. Marinelli</i>	

UNFOLDING THE TRUE ATMOSPHERIC NEUTRINO EVENT RATE IN THE 1GEV - 1TEV RANGE USING ICECUBE/DEEPCORE	6022
<i>J. Sandroos</i>	
THE SUN SHADOW OBSERVATION WITH THE ANTARES NEUTRINO TELESCOPE	6030
<i>T. Chiarusi, L.A. Fusco, A. Romanov, M. Sanguinetti, F. Versari</i>	
SEARCHING FOR NEUTRINO EMISSION FROM HARD X-RAY SOURCES WITH ICECUBE	6036
<i>M. Santander</i>	
GALACTIC BULGE MONITOR WITH ASHRA-1 AND NTA DETECTORS	6044
<i>M. Sasaki</i>	
CHARACTERIZATION OF THE ASTROPHYSICAL DIFFUSE NEUTRINO FLUX WITH ICECUBE HIGH-ENERGY STARTING EVENTS	6050
<i>A. Schneider</i>	
TACKLING LIMITED SIMULATION AND SMALL SIGNALS	6058
<i>C. Argüelles, A. Schneider, T. Yuan</i>	
CORRELATION OF ICECUBE NEUTRINOS WITH THE 2MASS REDSHIFT SURVEY	6062
<i>S. Scialfani, N. Kurahashi Neilson</i>	
HIGH-ENERGY ASTROPHYSICAL NEUTRINOS FROM INTERACTIONS IN THE LOCAL BUBBLE	6068
<i>M. Bouyahiaoui, M. Kachelriess, D. Semikoz</i>	
ADOPTION OF CONTINUOUS WAVELET AND RECURRENCE PLOTS TO COMPARATIVE STUDIES OF NEUTRON MONITOR DATA SETS FROM THE PERIOD 1975 – 1992	6075
<i>T. Seredyn, A. Wysokinski, Z. Kobyliński</i>	
CHARACTERIZING THE HIGH-ENERGY ACTIVITY OF BLAZARS POSSIBLY CORRELATED WITH OBSERVED ASTROPHYSICAL NEUTRINOS	6082
<i>A. Sharma, A. Marinelli, J.R. Sacahui Reyes, M. Osorio</i>	
MEASUREMENT OF THE DIFFUSE MUON NEUTRINO FLUX USING STARTING TRACK EVENTS IN ICECUBE	6090
<i>M. Silva, S. Mancina</i>	
NEUTRINO TELESCOPE IN LAKE BAIKAL: PRESENT AND FUTURE	6097
<i>F. Simkovic, A.D. Avrorin, A.V. Avrorin, V.M. Aynutdinov, R. Bannash, I.A. Belolaptikov, V.B. Brudanin, N.M. Budnev, G.V. Domogatsky, A.A. Doroshenko, R. Dvornický, A.N. Dyachok, Z.A.M. Dzhlkibaev, L. Fajt, S.V. Fialkovsky, A.R. Gafarov, K.V. Golubkov, N.S. Gorshkov, T.I. Gress, R. Ivanov, K.G. Kebkal, O.G. Kebkal, E.V. Khramov, M.M. Kolbin, K.V. Konischev, A.V. Korobchenko, A.P. Koshechkin, A.V. Kozhin, M.V. Kruglov, M.K. Kryukov, V.F. Kulepov, M.B. Milenin, R.A. Mirgazov, V. Nazari, A.I. Panfilov, D.P. Petukhov, E.N. Pliskovsky, M.I. Rozanov, E.V. Rjabov, V.D. Rushay, G.B. Safronov, B.A. Shaybonov, M.D. Shelepov, A.V. Skurikhin, A.G. Solovjev, M.N. Sorokovikov, I. Štekl, O.V. Suvorova, E.O. Sushenok, V.A. Tabolenko, B.A. Tarashansky, S.A. Yakovlev</i>	

A POSITIONING SYSTEM FOR BAIKAL-GVD.....	6106
<i>F. Simkovic, A.D. Avrorin, A.V. Avrorin, V.M. Aynutdinov, R. Bannash, I.A. Belolaptikov, V.B. Brudanin, N.M. Budnev, G.V. Domogatsky, A.A. Doroshenko, R. Dvornický, A.N. Dyachok, Z.A.M. Dzhilkibaev, L. Fajt, S.V. Fialkovsky, A.R. Gafarov, K.V. Golubkov, N.S. Gorshkov, T.I. Gress, R. Ivanov, K.G. Kebkal, O.G. Kebkal, E.V. Khramov, M.M. Kolbin, K.V. Konischev, A.V. Korobchenko, A.P. Koshechkin, A.V. Kozhin, M.V. Kruglov, M.K. Kryukov, V.F. Kulepov, M.B. Milenin, R.A. Mirgazov, V. Nazari, A.I. Panfilov, D.P. Petukhov, E.N. Pliskovsky, M.I. Rozanov, E.V. Rjabov, V.D. Rushay, G.B. Safronov, B.A. Shaybonov, M.D. Shelepov, A.V. Skurikhin, A.G. Solovjev, M.N. Sorokovikov, I. Štekl, O.V. Suvorova, E.O. Sushenok, V.A. Tabolenko, B.A. Tarashansky, S.A. Yakovlev</i>	
THE BAIKAL-GVD NEUTRINO TELESCOPE: FIRST RESULTS OF MULTI-MESSENGER STUDY.....	6111
<i>F. Simkovic, A.D. Avrorin, A.V. Avrorin, V.M. Aynutdinov, R. Bannash, I.A. Belolaptikov, V.B. Brudanin, N.M. Budnev, G.V. Domogatsky, A.A. Doroshenko, R. Dvornický, A.N. Dyachok, Z.A.M. Dzhilkibaev, L. Fajt, S.V. Fialkovsky, A.R. Gafarov, K.V. Golubkov, N.S. Gorshkov, T.I. Gress, R. Ivanov, K.G. Kebkal, O.G. Kebkal, E.V. Khramov, M.M. Kolbin, K.V. Konischev, A.V. Korobchenko, A.P. Koshechkin, A.V. Kozhin, M.V. Kruglov, M.K. Kryukov, V.F. Kulepov, M.B. Milenin, R.A. Mirgazov, V. Nazari, A.I. Panfilov, D.P. Petukhov, E.N. Pliskovsky, M.I. Rozanov, E.V. Rjabov, V.D. Rushay, G.B. Safronov, B.A. Shaybonov, M.D. Shelepov, A.V. Skurikhin, A.G. Solovjev, M.N. Sorokovikov, I. Štekl, O.V. Suvorova, E.O. Sushenok, V.A. Tabolenko, B.A. Tarashansky, S.A. Yakovlev</i>	
FIRST DOUBLE CASCADE TAU NEUTRINO CANDIDATES IN ICECUBE AND A NEW MEASUREMENT OF THE FLAVOR COMPOSITION.....	6115
<i>J. Stachurska</i>	
SEARCH FOR NEUTRINOS FROM POPULATIONS OF OPTICAL TRANSIENTS.....	6123
<i>R. Stein</i>	
MEASUREMENT OF THE DIFFUSE ASTROPHYSICAL MUON-NEUTRINO SPECTRUM WITH TEN YEARS OF ICECUBE DATA.....	6131
<i>J. Stettner</i>	
NEUTRINO OSCILLATION RESEARCH WITH KM3NET/ORCA.....	6139
<i>S. Hallmann, B. Strandberg</i>	
HYBRID DETECTION OF HIGH-ENERGY COSMIC NEUTRINOS WITH THE NEXT GENERATION NEUTRINO DETECTORS AT THE SOUTH POLE.....	6146
<i>S. Toscano, P. Coppin, K. de Vries, N. van Eijndhoven, J.A. Aguilar</i>	
THE NEXT GENERATION OF ICECUBE REAL-TIME NEUTRINO ALERTS	6154
<i>E. Blaufuss, T. Kintscher, L. Lu, C.F. Tung</i>	
CHARACTERISATION OF TWO PMT MODELS FOR THE ICECUBE UPGRADE MDOM	6162
<i>D. van Eijk, J. Schneider, M. Unland</i>	
OBSERVING GEV NEUTRINO TRANSIENTS IN THE MULTI-MESSENGER ERA	6170
<i>V. Van Elewyck, S.E.M. Ahmed Maouloud, G. De Wasseige, M. Ahlers, M. Bustamante</i>	
PROBING THE EARTH CORE COMPOSITION WITH NEUTRINO OSCILLATION TOMOGRAPHY.....	6178
<i>J. Coelho, S. Bourret, E. Kaminski, V. Van Elewyck</i>	

CURRENT CONSTRAINTS FROM COSMOGENIC NEUTRINOS ON THE FRACTION OF PROTONS IN UHECRS	6186
<i>A. van Vliet, R. Alves Batista, J. Hörandel</i>	
SUPERNOVA NEUTRINOS SEARCH WITH THE LVD EXPERIMENT: THE 2019 UPDATE	6194
<i>C.F. Vigorito, G. Bruno, W. Fulgione, A. Molinario</i>	
AN ACOUSTIC CALIBRATION SYSTEM FOR THE ICECUBE UPGRADE	6202
<i>D. Heinen, S. Shefali, R. Turcotte, L.S. Weinstock, C. Wiebusch, S. Zierke</i>	
THE ICECUBE UPGRADE - DESIGN AND SCIENCE GOALS	6210
<i>A. Ishihara</i>	
MULTI-MESSENGER INTERPRETATION OF THE NEUTRINOS FROM TXS 0506+056	6218
<i>W. Winter, S. Gao, X. Rodrigues, A. Fedynitch, A. Palladino, M. Pohl</i>	
CONCEPT STUDY FOR THE BEAMFORMING ELEVATED ARRAY FOR COSMIC NEUTRINOS (BEACON)	6227
<i>S. Wissel, J. Alvarez-Muniz, C. Burch, A. Cummings, W. Carvalho, C. Deaconu, G. Hallinan, K. Hughes, A. Ludwig, E. Oberla, C. Paciaroni, A. Rodriguez, A. Romero-Wolf, H. Schoorlemmer, D. Southall, B. Strutt, M. Vasquez, A.G. Vieregg, E. Zas</i>	
COMPREHENSIVE ESTIMATE OF THE SENSITIVITY OF ANITA TO TAU NEUTRINOS	6235
<i>S. Wissel, C. Burch, W. Carvalho, J. Crowley, J. Alvarez-Muniz, A. Cummings, A. Kautner, A. Romero-Wolf, H. Schoorlemmer, E. Zas</i>	
SKYLLH - A GENERALIZED PYTHON-BASED TOOL FOR LOG-LIKELIHOOD ANALYSES IN MULTI-MESSENGER ASTRONOMY	6243
<i>M. Wolf</i>	
ASTROPHYSICAL TAU NEUTRINO IDENTIFICATION WITH ICECUBE WAVEFORMS	6249
<i>D. Xu, L. Wille</i>	
SOLAR NEUTRINO PHYSICS AT HYPER-KAMIOKANDE	6257
<i>T. Yano</i>	
FLARING RATE DISTRIBUTION OF GAMMA-RAY BLAZARS AND IMPLICATIONS FOR HIGH-ENERGY NEUTRINO EMISSION	6264
<i>K. Yoshida, M. Petropoulou, M. Urry, P. Coppi, C. Bailyn, G. Vasilopoulos, K. Murase, F. Oikonomou</i>	
A GENERIC UNIFIED MODEL FOR THE ICECUBE NEUTRINOS AND THE ULTRA-HIGH ENERGY COSMIC RAYS IN THE PHOTOMESON PRODUCTION SCENARIO	6272
<i>S. Yoshida, K. Murase</i>	
MEASUREMENT OF THE HIGH-ENERGY ALL-FLAVOR NEUTRINO-NUCLEON CROSS SECTION WITH ICECUBE	6280
<i>T. Yuan</i>	
A MULTI-MESSENGER PICTURE OF GALAXY MERGERS: NEUTRINOS AND ELECTROMAGNETIC EMISSIONS	6287
<i>C. Yuan, K. Murase, P. Meszaros</i>	

VOLUME 10

SH - SOLAR & HELIOSPHERIC

QUARKNET COORDINATION OF A COSMIC RAY EXPERIMENT OUTREACH PROJECT DURING A TOTAL SOLAR ECLIPSE	6295
<i>M. Adams, N. Unterman, C. Carr, J. Rosenberg, A. Valsamis, T. Dallal, M. Matten, J. Miller, E. Schur, A. Sears</i>	
HIGH SCHOOL STUDENTS' COSMIC RAY MEASUREMENTS DURING A SOLAR ECLIPSE	6303
<i>M. Adams, A. Valsamis, C. Carr, J. Rosenberg, N. Unterman, T. Dallal, M. Matten, J. Miller, E. Schur, A. Sears</i>	
STUDY OF COSMIC RAY RATIO OF FREE PATHS NORMAL AND PARALLEL TO IMF WITH MUON DATA	6309
<i>H.S. Ahluwalia, R. Modzelewska</i>	
HOLISTIC STUDY OF SPACE WEATHER AND SPACE CLIMATE: 1700- 2018	6317
<i>H.S. Ahluwalia</i>	
PROTON FLUX VARIATIONS IN THE INNER RADIATION BELT IN SOLAR CYCLE 24	6325
<i>S. Aleksandrin, A. Galper, S. Koldashov, V. Malakhov, V. Mikhailov, T. Zharaspayev</i>	
PRELIMINARY RESULTS FROM A MINI NEUTRON MONITOR IN CENTRAL SAUDI ARABIA	6332
<i>M.M. Almutayri</i>	
THE HELIOSPHERIC MODULATION OF ELECTRONS AND POSITRONS OVER A COMPLETE SOLAR CYCLE	6339
<i>O.M. Aslam, D. Bisschoff, M. Potgieter</i>	
THE SOLAR MODULATION OF PROTONS AND ANTI-PROTONS	6347
<i>O.M. Aslam, D. Bisschoff, M. Potgieter</i>	
NEUTRON MONITOR TIME-DELAY MEASUREMENTS TO TRACK COSMIC RAY SPECTRAL VARIATION DUE TO SOLAR MODULATION AT HIGH AND LOW CUTOFF RIGIDITY	6355
<i>C. Banglieng</i>	
OBTAINING A HISTORY OF THE FLUX OF COSMIC RAYS USING IN SITU COSMOGENIC ¹⁴ C TRAPPED IN POLAR ICE	6363
<i>S. BenZvi, V.V. Petrenko, B. Hmiel, M. Dyonisius, A.M. Smith, B. Yang, Q. Hua</i>	
ORCA (ANTARCTIC COSMIC RAY OBSERVATORY): 2018 LATITUDINAL SURVEY	6371
<i>J.J. Blanco, O. García-Población, I. García-Tejedor, C. Steigies, J. Medina, M. Prieto, A. López-Comazzi, S. Ayuso, R. Gómez-Herrero, J.A. Garzon, D. García-Castro, P. Cabanelas, A. Gomis-Moreno, V. Villasante-Marcos, B. Heber, A. Morozova, G. Kornakov, T. Kurtukian, A. Blanco, L. Lopes, J.P. Saravia, H. Krüger, D.T. Strauss, V. Yanke</i>	
A NEW NEUTRON MONITOR AT THE JUAN CARLOS I SPANISH ANTARCTIC STATION (LIVINGSTON ISLAND-ANTARCTIC PENINSULA)	6379
<i>J.J. Blanco, O. García Población, J.I. García Tejedor, J. Medina, M. Prieto, A. López-Comazzi, S. Ayuso, R. Gómez-Herrero, C. Steigies</i>	

SOLAR ENERGETIC PARTICLE OBSERVATIONS WITH THE PAMELA EXPERIMENT	6387
<i>A. Bruno, E.R. Christian, G.A. de Nolfo, I.G. Richardson, J.M. Ryan</i>	
SPACE WEATHER OBSERVATIONS DURING SEPTEMBER 2017 WITH CALET ON THE INTERNATIONAL SPACE STATION	6395
<i>A. Bruno</i>	
THE INFLUENCE OF CORONAL MASS EJECTION CHARACTERISTICS ON THE SPREAD OF SOLAR ENERGETIC PARTICLES.....	6403
<i>C. Cohen, G. Mason, R. Mewaldt</i>	
TIME DEPENDENCE OF THE P/HE RATIO IN COSMIC RAYS ACCORDING TO THE FORCE-FIELD APPROXIMATION.....	6411
<i>C. Corti, V. Bindi, C. Consolandi, C. Freeman, A. Kuhlman, C. Light, M. Palermo, S. Wang</i>	
TEST OF VALIDITY OF THE FORCE-FIELD APPROXIMATION WITH AMS-02 AND PAMELA MONTHLY FLUXES.....	6418
<i>C. Corti, V. Bindi, C. Consolandi, C. Freeman, A. Kuhlman, C. Light, M. Palermo, S. Wang</i>	
VOYAGER 2 OBSERVATIONS OF THE ANISOTROPY OF ANOMALOUS COSMIC RAYS IN THE HELIOSHEATH	6426
<i>A.C. Cummings, E.C. Stone, B.C. Heikkila, N. Lal, J. Richardson</i>	
LONG DURATION GAMMA-RAY FLARES AND HIGH ENERGY SOLAR ENERGETIC PARTICLES: IS THERE A CONNECTION?.....	6434
<i>G.A. De Nolfo, A. Bruno, J.M. Ryan, S. Dalla, J. Giacalone, I.G. Richardson, E.R. Christian</i>	
SOLAR NEUTRON TRACKING (SONTRAC) CONCEPT	6442
<i>G.A. De Nolfo, A. Bruno, J. Dumonthier, I. Liceaga-Indart, J. Legere, R. Messner, J.G. Mitchell, J.M. Ryan, G. Suarez, T. Tatoli</i>	
FIRST SEARCH FOR GEV NEUTRINOS FROM BRIGHT GAMMA-RAY SOLAR FLARES USING THE ICECUBE NEUTRINO OBSERVATORY	6450
<i>G. De Wasseige</i>	
EXPERIMENTAL BIASES ON THE HELIOSPHERIC CONTRIBUTION TO THE OBSERVED TEV COSMIC RAY ANISOTROPY	6458
<i>J.C. Díaz Vélez, P. Desiati</i>	
INDICATORS OF SPACE WEATHER EVENTS IN COSMIC RAYS FLUX DURING THE SOLAR CYCLE 24.....	6467
<i>A. Gil, R. Modzelewska, S. Moskwa, A. Siluszyk, M. Siluszyk, A. Wawrzynczak</i>	
COMPARATIVE STUDY OF HIGHER HARMONICS OF COSMIC RAY INTENSITY ON QUIET DAYS BETWEEN EQUATORIAL AND MID LATITUDE NEUTRON MONITORING STATIONS.....	6476
<i>M.K. Richharia</i>	
DIFFERENTIAL ROTATION OF THE SUN AS A SOURCE OF GALACTIC COSMIC RAYS QUASI-BIENNIAL OSCILLATIONS	6488
<i>A. Gil, M. Alania</i>	
ANISOTROPIC COSMIC-RAY ENHANCEMENT (ACRE): CASE STUDIES OF 07-JUN-2015 AND 26-AUG-2018	6498
<i>A. Gil, G. Kovaltsov, V. Mikhailov, A. Mishev, S. Poluianov, I. Usoskin</i>	

GALACTIC COSMIC-RAY ANISOTROPY DURING FORBUSH DECREASES: EVIDENCE FOR DIFFUSIVE BARRIERS AND LARGE-SCALE FLOW	6502
<i>G. Ihongo, D. Ruffolo, A. Saiz, U. Tortempun, A.C.L. Chian</i>	
FEATURES OF THE COSMIC RAY ANISOTROPY IN THE MINIMA FOR # 23 - 25 SOLAR CYCLES.....	6510
<i>M. Siluszyk, K. Iskra, W. Wozniak, R. Modzelewska, M. Alania</i>	
THE MEASUREMENT OF ION-INDUCED CLOUD NUCLEATION IRRADIATED WITH A 180-MEV NITROGEN ION AND PROTON BEAMS AT HIMAC ACCELERATOR FACILITY	6511
<i>Y. Itow, A. Suzuki, T. Sako, T. Nakayama, K. Masuda, F. Miyake, Y. Matsumi, K. Miura, K. Kusano</i>	
EFFECTS OF THE ATMOSPHERIC ELECTRIC FIELD ON THE HAWC SCALER RATE	6518
<i>A.R. Jara Jimenez, A. Lara, A.B. Kollamparambil Paul, J. Ryan</i>	
TEMPERATURES OF LARGE SOLAR X-RAY EVENTS AND ASSOCIATED CME SPEEDS	6526
<i>S.W. Kahler, A. Ling</i>	
VARIATIONS OF HEAVY ION ABUNDANCES RELATIVE TO PROTON ABUNDANCES IN LARGE SOLAR ENERGETIC ($E > 10$ MEV) PARTICLE EVENTS.	6534
<i>J. Round, R. Loper, O. Nava, S.W. Kahler</i>	
RATIOS OF SEP/SUPRATHERMAL INTENSITIES AND ASSOCIATED CME SPEEDS.....	6542
<i>S.W. Kahler, A. Ling</i>	
NEURAL NETWORK FORECAST OF THE SOLAR ACTIVITY AND COSMIC RAY INTENSITY DURING CYCLE 25.....	6550
<i>Z. Kobyliński, A. Wysokinski, T. Seredyn</i>	
A NEUTRON MONITOR AS AN INTEGRAL SPECTROMETER FOR GLE ANALYSIS: EFFECTIVE RIGIDITY AND REASSESSMENT OF INTEGRAL FLUXES	6558
<i>S. Koldobskiy, A. Mishev, G. Kovaltsov, I. Usoskin</i>	
VALIDATION OF THE NEUTRON MONITOR YIELD FUNCTIONS USING DATA FROM AMS-02 AND PAMELA EXPERIMENTS, 2006--2017	6566
<i>S. Koldobskiy, V. Bindi, C. Corti, G. Kovaltsov, I. Usoskin</i>	
ATMOSPHERIC PRESSURE DEPENDANCE OF HAWC SCALER SYSTEM.....	6574
<i>A.B. Kollamparambil Paul, A. Lara, J. Ryan</i>	
ACCELERATION OF ANOMALOUS COSMIC RAYS: SOLAR CYCLE VARIATIONS.....	6582
<i>J. Kota</i>	
COSMIC-RAY INTENSITY ENHANCEMENTS ALONG HELIOSPHERIC CURRENT SHEETS	6590
<i>J. Kota, K. Munakata</i>	
HOW DO COSMIC RAYS ENTER AND LEAVE THE HELIOSPHERE?	6591
<i>J. Kota</i>	
SOLAR MODULATION OF COSMIC RAYS IN A SEMI-ANALYTICAL FRAMEWORK.....	6593
<i>M. Kuhlén, P. Mertsch</i>	

MEAN HIGH-ENERGY IONIC CHARGE STATES DURING THE SEPTEMBER 2017 SOLAR ENERGETIC PARTICLE EVENTS OBSERVED BY ACE AND STEREO.....	6601
<i>A. Labrador, L. Sollitt, C. Cohen, E. Christian, A.C. Cummings, R. Leske, G. Mason, R. Mewaldt, E.C. Stone, T. von Rosenvinge, M. Wiedenbeck</i>	
GALACTIC COSMIC RAY SUN SHADOW DURING THE DECLINING PHASE OF CYCLE 24 OBSERVED BY HAWC	6608
<i>A. Lara, P. Colín, K.P. Arunbabuaand, J. Ryan</i>	
27-DAY MODULATION OF COSMIC RAY INTENSITIES DURING THE LAST TWO SOLAR MINIMA	6616
<i>R. Leske, A.C. Cummings, R.A. Mewaldt, E.C. Stone, T.T. von Rosenvinge, M.E. Wiedenbeck</i>	
INFLUENCE OF ATMOSPHERIC ELECTRIC FIELD OVER NM ON CR INTENSITY: OBSERVATIONS ON MT. HERMON AND COMPARISON WITH THEORY	6624
<i>L. Dorman, L. Pustilnik, E. Petrov</i>	
NEUTRON MONITOR COMPARISON BY SPECTRAL ANALYSIS IN RELATION TO COSMIC RAY INTENSITY IN THE PERIOD 2013-2018	6632
<i>A. López Comazzi</i>	
CHAOTIC EFFECTS ON COSMIC RAY ANISOTROPY IN A HELIOSPHERE-INSPIRED MODEL.....	6640
<i>V. Lopez-Barquero, P. Desiati</i>	
COSMIC RAY VARIATIONS IN OCTOBER, 2012	6649
<i>A. Lukovnikova</i>	
THE IMPACT OF THE CIRCUMSTELLAR MAGNETIC FIELD ON THE RESULTING GAMMA-RAY EMISSION FROM SUPERNOVA REMNANTS	6659
<i>I. Sushch, R. Brose, M. Pohl</i>	
CORRELATION ANALYSIS BETWEEN THE AEROSOL OPTICAL DEPTH AND COSMIC RAYS	6668
<i>A. Maghrabi, K. Kudela</i>	
TEMPERATURE EFFECTS ON COSMIC RAY MUONS OBSERVED BY MULTIWIRE DETECTOR AT HIGH CUTOFF RIGIDITY STATION	6675
<i>A. Maghrabi, A. Aldosari, M. Almutairi, M. Altilasi, A. Alshehri, R. Alfadhel, B. Almshari, J. Alrashied, E. Almutairi, B. Alrashide</i>	
PRELIMINARY RESULTS FROM CARPET CHARGE PARTICLES DETECTOR LOCATED IN HIGH CUT OFF RIGIDITY	6682
<i>A. Maghrabi, V. Makhmutov, A. Aldosari, M. Almutairi, M. Altilasi, M. Philippov, E. Kalinin, A. Alshehri, R. Alfadhel, B. Almshari, J. Alrashied, E. Almutairi, B. Alrashide</i>	
GROUND AND FLIGHT PERFORMANCES OF THE BALLOON-BORNE MAGNETIC SPECTROMETER AESOP-LITE	6690
<i>P.S. Mangeard, J. Clem, P. Evenson, R. Johnson, B. Lucas, S. Mechbal, J. Roth</i>	
TIME DEPENDENCE OF THE PROTON AND HELIUM FLUXES MEASURED BY PAMELA DURING SOLAR MINIMUM (2006 - 2009).....	6698
<i>N. Marcelli, M. Boezio, A. Lenni, M. Martucci, W. Menn, R. Munini, R. Sparvoli, O.P.M. Aslam, D. Bisschoff, M. Potgieter</i>	

SPACE-WEATHER CAPABILITIES AND PRELIMINARY RESULTS OF THE HIGH ENERGY PARTICLE DETECTOR (HEPD) ON-BOARD THE CSES-01 SATELLITE.....	6705
<i>M. Martucci, G. Ambrosi, R. Battiston, S. Bartocci, L. Basara, W.J. Burger, D. Campana, L. Carfora, M. Casolino, G. Castellini, P. Cipollone, L. Conti, A. Contin, C. De Donato, F. De Persio, C. De Santis, B. Di Ruzza, F.M. Follega, C. Guandalini, M. Ionica, R. Iuppa, G. Laurenti, I. Lazzizzera, M. Lolli, C. Manea, L. Marcelli, G. Masciantonio, M. Mergé, G. Osteria, L. Pacini, F. Palma, F. Palmonari, B. Panico, A. Parmentier, L. Patrizii, F. Perfetto, P. Picozza, M. Piersanti, M. Pozzato, M. Puel, I. Rashevskaya, E. Ricci, M. Ricci, S. Ricciarini, V. Scotti, A. Sotgiu, R. Sparvoli, B. Spataro, V. Vitale, P. Zuccon, S. Zoffoli</i>	
MEASUREMENT OF THE LOW ENERGY (20-300 MEV) ELECTRON AND POSITRON SPECTRA WITH THE AESOP-LITE BALLOON MISSION.....	6713
<i>S. Mechbal, J. Clem, P. Evenson, R. Johnson, B. Lucas, P.S. Mangeard, J. Roth</i>	
THE LARGE ENERGETIC STORM PARTICLE EVENT OF SEPTEMBER 18, 2017 OBSERVED BY STEREO-A	6721
<i>R. Mewaldt, C. Cohen, G. Li, J. Hu, D. Lario, E. Christian</i>	
ENERGY SPECTRA OF TRAPPED ELECTRONS AND POSITRONS WITH $E > 50$ MEV MEASURED BY THE PAMELA MAGNETIC SPECTROMETER.....	6726
<i>V. Mikhailov, A. Bruno</i>	
USAGE OF THE GLOBAL NM NETWORK FOR ASSESSMENT OF THE RADIATION EXPOSURE AT FLIGHT ALTITUDES	6733
<i>A. Mishev, I. Usoskin</i>	
SPECTRA OF EXTREME GLES DERIVED USING NEUTRON MONITOR NETWORK RECORDS	6741
<i>A. Mishev, I. Usoskin</i>	
NEUTRON MONITOR YIELD FUNCTION AT SEVERAL ALTITUDES ABOVE SEA LEVEL: NEW IMPROVED COMPUTATION	6749
<i>A. Mishev, G. Kovaltsov, I. Usoskin</i>	
SOLAR MODULATION OF GALACTIC COSMIC-RAY ELECTRONS MEASURED WITH CALET	6757
<i>S. Miyake, Y. Migita, Y. Asaoka, Y. Akaike, S. Torii, T. Terasawa, R. Kataoka, K. Sakai</i>	
QUASI-PERIODIC CHANGES OF THREE DIMENSIONAL SOLAR ANISOTROPY OF GALACTIC COSMIC RAYS FOR 1965-2014	6764
<i>R. Modzelewska, M. Alania</i>	
STUDY OF THE 27-DAY VARIATIONS OF GCR IN 2007-2008 BASED ON PAMELA AND ARINA OBSERVATIONS	6771
<i>R. Modzelewska, G. Bazilevskaya, M. Boezio, S.V. Koldashov, M.B. Krainev, A. Mayorov, M.A. Mayorova, R. Munini, I.K. Troitskaya, R.F. Yulbarisov</i>	
LONG-TERM VARIATION OF GALACTIC COSMIC RAY INTENSITY OBSERVED WITH THE NAGOYA MULTIDIRECTIONAL MUON DETECTOR.....	6779
<i>K. Munakata, C. Kato, R.R.S. Mendonça, M. Tokumaru</i>	
ISOTOPE SOLAR MODULATION WITH THE PAMELA EXPERIMENT	6785
<i>R. Munini, D. Bisschoff, M. Boezio, A. Lenni, W. Menn, N. Marcelli, M. Potgieter, O. Aslam</i>	
ELVES RECONSTRUCTION AND CHARACTERIZATION AT THE PIERRE AUGER OBSERVATORY	6793
<i>R. Mussa</i>	

CAN WE ESTIMATE THE VARIATION OF THE Z-COMPONENT OF THE INTERPLANETARY MAGNETIC FIELD FROM THE SUN SHADOW?	6801
<i>Y. Nakamura, on behalf of the Tibet ASgamma Collaboration</i>	
STUDY OF THE SOLAR MAGNETIC FIELD INFLUENCE ON THE COSMIC RAY SUN SHADOW	6804
<i>Y. Nan, C. Feng, S. Chen, C. Jiang</i>	
EFFECTS OF SCATTERING PARAMETERS ON CHARGE-SIGN-DEPENDENT COSMIC RAY MODULATION.....	6812
<i>M.D. Ngobeni, M.S. Potgieter, O.P.M. Aslam, D. Bisschoff</i>	
CORRELATION STUDY BETWEEN TELESCOPE ARRAY LIGHTNING LOCATION SYSTEM AND GROUND SURFACE PARTICLE DETECTOR	6819
<i>T. Okuda</i>	
WATER CHERENKOV DETECTOR OPTIMIZATION FOR SPACE WEATHER STUDIES IN ANTARCTIC.....	6826
<i>L. Otiniano, V. Valera, J. Vega, C. Castromonte, J. Peña</i>	
SPECTRA OF SOLAR ENERGETIC PARTICLE AND GALACTIC COSMIC RAYS OVER A MILLION YEARS RECONSTRUCTED USING ALUMINIUM-26 DATA FROM LUNAR ROCKS.....	6832
<i>S. Poluianov, G. Kovaltsov, I. Usoskin</i>	
FEATURES OF 2017-2018 SOLAR PROTON EVENTS DETERMINED BY ON-BOARD MEASUREMENTS AT RUSSIAN SPACECRAFT IN GEOSTATIONARY AND POLAR ORBITS.....	6840
<i>G. Protopopov, V. Anashin, E. Bondarev, N. Balykina, V.I. Denisova, A.V. Tsurgaev, A. Repin</i>	
MODELING THE 2017 SEPTEMBER 10 LONG DURATION GAMMA RAY FLARE.....	6847
<i>J. Ryan, G.A. De Nolfo, D. Gary</i>	
DETECTING SINGLE AND MULTIPLE ATMOSPHERIC SECONDARIES IN AN 18NM64.....	6854
<i>A. Sáiz, W. Mitthumsiri, D. Ruffolo, P. Evenson, T. Nutaro</i>	
MODELING OF THE ANISOTROPY OF GALACTIC COSMIC RAYS IN AN MHD- SIMULATED HELIOSPHERE	6860
<i>T. Sako</i>	
ANALYSIS OF DATA FROM THE LOW-ENERGY MODES OF THE SURFACE DETECTOR OF THE PIERRE AUGER OBSERVATORY	6864
<i>M. Schimassek</i>	
EVOLUTION OF GEOMAGNETIC CUTOFFS AT THE SOUTH POLE AND NEUTRON MONITOR RATES.....	6872
<i>L.R. Rosen, S. Seunarine</i>	
RE-EXAMINATION OF THE FIRST FIVE GROUND-LEVEL EVENTS.....	6880
<i>M.A. Shea, D. Smart</i>	
SOLAR NEUTRONS OBSERVED DURING SEPTEMBER 4TH AND 10TH, 2017 BY SEDA- FIB.....	6888
<i>K. Kamiya, K. Koga, H. Matsumoto, S. Masuda, Y. Muraki, H. Tajima, S. Shibata</i>	

CORRELATION BETWEEN COSMIC RAY INTENSITY VARIATIONS OBSERVED BY THE LARGE ACCEPTANCE GRAPES-3 MUON TELESCOPE AND INTERPLANETARY MAGNETIC FIELD.....	6894
<i>H. Kojima, S. Shibata, A. Oshima, S. Kawakami, Y. Hayashi, I. Morishita, T. Nakamura, T. Nonaka, S. Ogio, H. Takamaru, K. Tanaka, N. Ito, T. Matsuyama, K. Yamazaki, M. Tokumaru, S.K. Gupta, S. R. Dugad, B. Hariharan, P. Jagadeesan, A. Jain, V.B. Jhansi, P. K. Mohanty, S. D. Morris, P. K. Nayak, P. S. Rakshe, K. Ramesh, B.S. Rao, L.V. Reddy, M. Zuberi, S. Ahmad, A. Chandra, P. Subramanian</i>	
THE CONE OF ACCEPTANCE AND THE MAGNETIC RIGIDITY CUT-OFF OF COSMIC RAY PARTICLES FOR DIFFERENT MODELS OF THE INTERNATIONAL GEOMAGNETIC REFERENCE FIELD FROM 1965-2015 IN THE DEBLIN AIRPORT, POLAND	6901
<i>M. Siluszyk, K. Iskra, W. Wozniak, R. Modzelewska, T. Seredyn, T. Zienkiewicz</i>	
VERTICAL GEOMAGNETIC CUTOFF RIGIDITIES FOR EPOCH 2015.....	6902
<i>D. Smart, M.A. Shea</i>	
STATUS AND PERFORMANCE OF THE HIGH ENERGY PARTICLE DETECTOR (HEPD) ON-BOARD THE CSES-01 SATELLITE	6910
<i>A. Sotgiu, G. Ambrosi, R. Battiston, S. Bartoccia, L. Basara, W.J. Burger, D. Campana, L. Carfora, M. Casolino, G. Castellini, P. Cipollone, L. Conti, A. Contin, C. De Donato, F. De Persio, C. De Santis, B. Di Ruzza, F.M. Follega, C. Guandalini, M. Ionica, R. Iuppa, G. Laurenti, I. Lazzizzera, M. Lolli, C. Manea, L. Marcelli, M. Martucci, G. Masciantonio, M. Mergé, G. Osteria, L. Pacini, F. Palma, F. Palmonari, B. Panico, A. Parmentier, L. Patrizii, F. Perfetto, P. Picozza, M. Piersanti, M. Pozzato, M. Puel, I. Rashevskaya, E. Ricci, M. Ricci, S. Ricciarini, V. Scotti, R. Sparvoli, B. Spataro, V. Vitale, P. Zuccon, S. Zoffoli</i>	
DESIGN OF A PROTOTYPE READOUT ELECTRONICS FOR A LOW-ENERGY ION SPECTROMETER IN NEAR-EARTH SPACE	6917
<i>Z. Sun, Z. Cao, G. Yuan, S. Wang, Y. Li, K. Liu, S. Liu, Q. An</i>	
NEW RESULTS IN SOLAR MODULATION MODELING IN LIGHT OF RECENT COSMIC- RAY DATA FROM SPACE.....	6925
<i>N. Tomassetti, B. Bertucci, E. Fiandrini, B. Khiali</i>	
TIME LAG IN COSMIC-RAY MODULATION AND GLOBAL PROPERTIES OF THE SOLAR CYCLE.....	6933
<i>N. Tomassetti, B. Bertucci, E. Fiandrini, B. Khiali</i>	
GAMMA-RAY OBSERVATIONS AT THE COASTAL AREA OF JAPAN SEA IN WINTER SEASONS	6941
<i>H. Tsuchiya, T. Enoto, Y. Wada, Y. Furuta, K. Nakazawa, T. Yuasa, D. Umemoto, K. Makishima</i>	
COSMIC-RAY VARIABILITY ON THE MULTI-MILLENNIAL TIME SCALE: A NEW MULTI-PROXY RECONSTRUCTION.....	6948
<i>I. Usoskin, C.J. Wu, N. Krivova, S.K. Solanki, G. Kovaltsov, M. Baroni, E. Bard</i>	
SPECTRAL SLOPE ANALYSIS OF LONG-TERM COSMIC-RAY VARIATIONS AT EARTH	6955
<i>I. Usoskin, P. Väisänen, K. Mursula</i>	
IONIZATION EFFECT IN ATMOSPHERE DURING SEVERAL HALLOWEEN GLE EVENTS OF OCTOBER-NOVEMBER 2003.....	6962
<i>P.I.Y. Velinov, A. Mishev</i>	

SOLAR ENERGETIC PARTICLES AT PILEUP COLLISIONS OF THE MULTIPLE-SHOCK.....	6970
<i>X. Wang, Y. Yan, M. Ding</i>	
DESIGN OF AN FPGA BASED TDC READOUT ELECTRONICS FOR PROTOTYPE MARS ION AND NEUTRAL PARTICLE ANALYZER	6982
<i>L. Wang, Z. Cao, C. Feng, H. Chen, Y. Li, Y. Zhang, S. Liu, Q. An</i>	
OCCURRENCE OF ³ HE-RICH SOLAR ENERGETIC PARTICLES NEAR EARTH AND CLOSER TO THE SUN.....	6990
<i>M.E. Wiedenbeck, G.M. Mason, C.M.S. Cohen, D.J. McComas, E.R. Christian</i>	
SOLAR NEUTRON AND GAMMA-RAY DETECTOR FOR A 3U CUBESAT.....	6998
<i>K. Yamaoka, H. Tajima, K. Miyata, T. Inamori, Y. Sasai, H. Kawahara, J.H. Park, K. Nakazawa, S. Masuda, K. Matsushita, K. Itoh, D. Nobashi</i>	
A FAST AND EFFICIENT TECHNIQUE TO SIMULATE THE EFFECTS OF GEOMAGNETIC STORMS RECORDED BY GRAPES-3 IN REAL-TIME.....	7006
<i>M. Zuberi, S. Ahmad, A. Chandra, S.R. Dugad, S.K. Gupta, B. Hariharan, Y. Hayashi, P. Jagadeesan, A. Jain, V.B. Jhansi, S. Kawakami, H. Kojima, P.K. Mohanty, S.D. Morris, P.K. Nayak, A. Oshima, P.S. Rakshe, K. Ramesh, B.S. Rao, L.V. Reddy, S. Shibata</i>	
GLOBAL CHANGES OF CR GEOMAGNETIC CUTOFF RIGIDITIES AND TWO- PARAMETRIC REPRESENTATION OF LONG-TERM VARIATION SPECTRA.....	7014
<i>L. Dorman, P.G. Kobelev, V.G. Yanke</i>	
THEORETICAL MODELING OF GALACTIC COSMIC RAYS FLUX IN SOLAR CYCLES: 20 -23 INCLUDING DELAY TIME	7019
<i>M. Siluszyk</i>	

Author Index