

# **21st International Conference on Computing in High Energy and Nuclear Physics (CHEP 2015)**

Journal of Physics: Conference Series Volume 664

Okinawa, Japan  
13 - 17 April 2015

Part 1 of 3

ISBN: 978-1-5108-1816-3  
ISSN: 1742-6588

**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© (2015) by the Institute of Physics  
All rights reserved. The material featured in this book is subject to  
IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2016)

For permission requests, please contact the Institute of Physics  
at the address below.

Institute of Physics  
Dirac House, Temple Back  
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481  
Fax: 44 1 17 920 0979

[techtracking@iop.org](mailto:techtracking@iop.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: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## PART 1

### PLENARY

<b>DIVERSITY IN COMPUTING TECHNOLOGIES AND STRATEGIES FOR DYNAMIC RESOURCE ALLOCATION</b> .....	1
<i>G. Garzoglio, O. Gutsche</i>	
<b>COMPUTING AT THE BELLE II EXPERIMENT</b> .....	15
<i>Takanori Hara</i>	

### CLOUDS AND VIRTUALIZATION

<b>USING S3 CLOUD STORAGE WITH ROOT AND CVMFS</b> .....	22
<i>María Arsuaga-Ríos, Seppo S Heikkilä, Dirk Duellmann, René Meusel, Jakob Blomer, Ben Couturier</i>	
<b>SKYGRID</b> .....	30
<i>Alexander Baranov, Konstantin Nikitin, Andrey Ustyuzhanin</i>	
<b>SCALING THE CERN OPENSTACK CLOUD</b> .....	33
<i>T Bell, B Bompastor, S Bukowiec, J Castro Leon, M K Denis, J Van Eldik, M Fermin Lobo, L Fernandez Alvarez, D Fernandez Rodriguez, A Marino, B Moreira, B Noel, T Oulevey, W Takase, A Wiebalck, S Zilli</i>	
<b>MANAGING COMPETING ELASTIC GRID AND CLOUD SCIENTIFIC COMPUTING APPLICATIONS USING OPENNEBULA</b> .....	42
<i>S Bagnasco, D Berzano, S Lusso, M Masera, S Vallero</i>	
<b>LIGHTWEIGHT SCHEDULING OF ELASTIC ANALYSIS CONTAINERS IN A COMPETITIVE CLOUD ENVIRONMENT: A DOCKED ANALYSIS FACILITY FOR ALICE</b> .....	49
<i>D Berzano, J Blomer, P Buncic, I Charalampidis, G Ganis, R Meusel</i>	
<b>THE ALICE SOFTWARE RELEASE VALIDATION CLUSTER</b> .....	57
<i>D Berzano, M Krzewicki</i>	
<b>DOCKER &amp; HEP: CONTAINERIZATION OF APPLICATIONS FOR DEVELOPMENT, DISTRIBUTION AND PRESERVATION</b> .....	65
<i>S. Binet, B. Couturier</i>	
<b>DESIGN, RESULTS, EVOLUTION AND STATUS OF THE ATLAS SIMULATION AT POINT1 PROJECT</b> .....	73
<i>S Ballestrero, S M Batraneanu, F Brasolin, C Contescu, D Fazio, A Di Girolamo, C J Lee, M E Pozo Astigarraga, D A Scannicchio, A Sedov, M S Twomey, F Wang, A Zaytsev</i>	
<b>ATLAS@HOME: HARNESSING VOLUNTEER COMPUTING FOR HEP</b> .....	80
<i>C Adam-Bourdarios, D Cameron, A Filipcic, E Lancon, W Wu For The Atlas Collaboration</i>	
<b>CERNVM WEBAPI - CONTROLLING VIRTUAL MACHINES FROM THE WEB</b> .....	86
<i>I. Charalampidis, D. Berzano, J. Blomer, P. Buncic, G. Ganis, R. Meusel, B. Segal</i>	
<b>MAINTAINING TRACEABILITY IN AN EVOLVING DISTRIBUTED COMPUTING ENVIRONMENT</b> .....	94
<i>I Collier, R Wartel</i>	
<b>THE DIVERSE USE OF CLOUDS BY CMS</b> .....	101
<i>Anastasios Andronis, Daniela Bauer, Olivier Chaze, David Colling, Marc Dobson, Simon Fayer, Maria Girone, Claudio Grandi, Adam Huffman, Dirk Hufnagel, Farrukh Aftab Khan, Andrew Lahiff, Alison McCrae, Duncan Rand, Massimo Sgaravatto, Anthony Tiradani, Xiaomei Zhang</i>	
<b>MONITORING THE DELIVERY OF VIRTUALIZED RESOURCES TO THE LHC EXPERIMENTS</b> .....	109
<i>C Cordeiro, A Di Girolamo, D Giordano, L Field, D Spiga, L Villazon</i>	
<b>DYNAMIC PARTITIONING AS A WAY TO EXPLOIT NEW COMPUTING PARADIGMS: THE CLOUD USE CASE.</b> .....	116
<i>Vincenzo Ciaschini, Stefano Dal Pra, Luca Dell'Agnello</i>	
<b>IDENTITY FEDERATION IN OPENSTACK - AN INTRODUCTION TO HYBRID CLOUDS</b> .....	122
<i>Marek Denis, Jose Castro Leon, Emmanuel Ormancey, Paolo Tedesco</i>	

<b>IMPLEMENTATION AND USE OF A HIGHLY AVAILABLE AND INNOVATIVE IAAS SOLUTION: THE CLOUD AREA PADOVANA</b> .....	130
<i>C Aifitmiei, P Andreetto, S Bertocco, M Biasotto, S Dal Pra, F Costa, A Crescente, A Dorigo, S Fantinel, F Fanzago, E Frizziero, M Gulmini, M Michelotto, M Sgaravatto, S Traldi, M Venaruzzo, M Verlato, L Zangrando</i>	
<b>CMS@HOME: ENABLING VOLUNTEER COMPUTING USAGE FOR CMS</b> .....	138
<i>L Field, H Borrás, D Spiga, H Riahi</i>	
<b>STATUS AND ROADMAP OF CERNVM</b> .....	145
<i>D Berzano, J Blomer, P Buncic, I Charalampidis, G Ganis, R Meusel</i>	
<b>ACCESSING COMMERCIAL CLOUD RESOURCES WITHIN THE EUROPEAN HELIX NEBULA CLOUD MARKETPLACE</b> .....	153
<i>C Cordeiro, A De Salvo, A Di Girolamo, L Field, D Giordano, R Jones, L Villazon</i>	
<b>ATLAS USER ANALYSIS ON PRIVATE CLOUD RESOURCES AT GOEGRID</b> .....	161
<i>F Glaser, J Nadal Serrano, J Grabowski, A Quadt</i>	
<b>BELLE II PUBLIC AND PRIVATE CLOUD MANAGEMENT IN VMDIRAC SYSTEM</b> .....	167
<i>Rafa Grzymkowski, Takanori Hara On Behalf Of The Belle II Computing Group</i>	
<b>DYNAMIC PROVISIONING OF LOCAL AND REMOTE COMPUTE RESOURCES WITH OPENSTACK</b> .....	173
<i>M Giffels, T Hauth, F Polgart, G Quast</i>	
<b>TOWARDS A PRODUCTION VOLUNTEER COMPUTING INFRASTRUCTURE FOR HEP</b> .....	181
<i>N Høimyr, M Marquina, T Asp, P Jones, A Gonzalez, L Field</i>	
<b>BESIII PHYSICAL OFFLINE DATA ANALYSIS ON VIRTUALIZATION PLATFORM</b> .....	188
<i>Q Huang, H Li, B Kan, J Shi, X Lei</i>	
<b>ENABLING OPPORTUNISTIC RESOURCES FOR CMS COMPUTING OPERATIONS</b> .....	196
<i>D. Hüfnagel On Behalf Of The Cms Collaboration</i>	
<b>SCALING AGILE INFRASTRUCTURE TO PEOPLE</b> .....	202
<i>B Jones, G McCance, S Traylen, N Barrientos Arias</i>	
<b>USE OF CONTAINERISATION AS AN ALTERNATIVE TO FULL VIRTUALISATION IN GRID ENVIRONMENTS</b> .....	208
<i>Robin Long</i>	
<b>USE OF CONTAINERISATION AS AN ALTERNATIVE TO FULL VIRTUALISATION IN GRID ENVIRONMENTS</b> .....	213
<i>Robin Long</i>	
<b>DOCKER EXPERIENCE AT INFN-PISA GRID DATA CENTER</b> .....	218
<i>E. Mazzoni, S. Arezzini, T. Boccali, A. Ciampa, S. Coscetti, D. Bonacorsi</i>	
<b>LHCb EXPERIENCE WITH RUNNING JOBS IN VIRTUAL MACHINES</b> .....	224
<i>A. McNab, F. Stagni, C. Luzzi</i>	
<b>MANAGING VIRTUAL MACHINES WITH VAC AND VCycle</b> .....	231
<i>A. McNab, P. Love, E. Macmahon</i>	
<b>A PROTOTYPE INFRASTRUCTURE FOR CLOUD-BASED DISTRIBUTED SERVICES IN HIGH AVAILABILITY OVER WAN</b> .....	239
<i>C. Bulfon, G. Carlino, A. De Salvo, A. Doria, C. Graziosi, S. Pardi, A. Sanchez, M. Carboni, P. Bolletta, L. Puccio, V. Capone, L. Merola</i>	
<b>INTEROPERATING CLOUD-BASED VIRTUAL FARMS</b> .....	247
<i>S Bagnasco, F Colamaria, D Colella, E Casula, D Elia, A Franco, S Lusso, G Luparello, M Masera, G Miniello, D Mura, S Piano, S Vallero, M Venaruzzo, G Vito</i>	
<b>EVALUATION OF CONTAINERS AS A VIRTUALISATION ALTERNATIVE FOR HEP WORKLOADS</b> .....	255
<i>Gareth Roy, Andrew Washbrook, David Crooks, Gang Qin, Samuel Cadellin Skipsey, Gordon Stewart, David Britton</i>	
<b>BENCHMARKING AND ACCOUNTING FOR THE (PRIVATE) CLOUD</b> .....	263
<i>J Belleman, U Schwickerath</i>	
<b>INTEGRATION OF XROOTD INTO THE CLOUD INFRASTRUCTURE FOR ALICE DATA ANALYSIS</b> .....	271
<i>Mikhail Kompaniets, Oksana Shadura, Pavlo Svirin, Volodymyr Yurchenko, Andrey Zaroquentsev</i>	
<b>UTILIZING CLOUDS FOR BELLE II</b> .....	279
<i>R. J. Sobie</i>	
<b>THE EVOLUTION OF CLOUD COMPUTING IN ATLAS</b> .....	285
<i>Ryan P Taylor, Frank Berghaus, Franco Brasolin, Cristovao Jose Domingues Cordeiro, Ron Desmarais, Laurence Field, Ian Gable, Domenico Giordano, Alessandro Di Girolamo, John Hover, Matthew Leblanc, Peter Love, Michael Paterson, Randall Sobie, Alexandr Zaytsev</i>	
<b>CLOUD SERVICES FOR THE FERMILAB SCIENTIFIC STAKEHOLDERS</b> .....	293
<i>S Timm, G Garzoglio, P Mhashilkar, J Boyd, G Bernabeu, N Sharma, N Peregonow, H Kim, S Noh, S Palur, I Raicu</i>	

<b>TOWARDS MONITORING-AS-A-SERVICE FOR SCIENTIFIC COMPUTING CLOUD APPLICATIONS USING THE ELASTICSEARCH ECOSYSTEM.....</b>	300
<i>S Bagnasco, D Berzano, A Guarise, S Lusso, M Masera, S Vallero</i>	
<b>DEVELOPMENT OF SITE-ORIENTED ANALYTICS FOR GRID COMPUTING CENTRES.....</b>	307
<i>A. Washbrook, D. Crooks, G. Roy, S. Skipsey, G. Qin, G. P. Stewart, D. Britton</i>	

## **COMPUTING ACTIVITIES AND COMPUTING MODELS**

<b>PROTOTYPE OF A PRODUCTION SYSTEM FOR CHERENKOV TELESCOPE ARRAY WITH DIRAC.....</b>	314
<i>L Arrabito, J Bregeon, A Haupt, R Graciani Diaz, F Stagni, A Tsaregorodtsev</i>	
<b>A STUDY OF DYNAMIC DATA PLACEMENT FOR ATLAS DISTRIBUTED DATA MANAGEMENT.....</b>	321
<i>T Beermann, G A Stewart, P Maettig</i>	
<b>EXPLOITING CMS DATA POPULARITY TO MODEL THE EVOLUTION OF DATA MANAGEMENT FOR RUN-2 AND BEYOND.....</b>	329
<i>D Bonacorsi, T Boccali, D Giordano, M Girone, M Neri, N Magini, V Kuznetsov, T Wildish</i>	
<b>ATLAS DISTRIBUTED COMPUTING IN LHC RUN2.....</b>	338
<i>Simone Campana</i>	
<b>DISTRIBUTED COMPUTING FOR THE PIERRE AUGER OBSERVATORY.....</b>	345
<i>J. Chudoba</i>	
<b>IMPROVEMENTS OF LHC DATA ANALYSIS TECHNIQUES AT ITALIAN WLCG SITES. CASE-STUDY OF THE TRANSFER OF THIS TECHNOLOGY TO OTHER RESEARCH AREAS.....</b>	351
<i>L Alumni Solestizi, S Argiro, S Bagnasco, D Barberis, L M. Barone, T Boccali, D Bonacorsi, V Candelise, G Carlino, E Casula, D Ciangottini, A De Salvo, G Della Ricca, G Donvito, A Doria, R Di Nardo, D Elia, F Fabozzi, A Favareto, C Grandi, L Lista, G Luparello, G Maron, E Mazzoni, L Merola, G Miniello, D Mura, M Perez Villaplana, S Piano, A Pompili, D Rebatto, A Santocchia, M Sgaravatto, I Talamo, A Tricomi, S Vallero, M Venaruzzo, E Vilucchi</i>	
<b>DUAL-USE TOOLS AND SYSTEMATICS-AWARE ANALYSIS WORKFLOWS IN THE ATLAS RUN-2 ANALYSIS MODEL.....</b>	361
<i>David Adams, Paolo Calafura, Pierre-Antoine Delsart, Markus Elsing, Steven Farrell, Karsten Koeneke, Attila Krasznahorkay, Nils Krumnack, Eric Lancon, Wim Lavrijsen, Paul Laycock, Xiaowen Lei, Sara Strandberg, Wouter Verkerke, Iacopo Vivarelli, Martin Woudstra</i>	
<b>OPEN ACCESS FOR ALICE ANALYSIS BASED ON VIRTUALIZATION TECHNOLOGY.....</b>	367
<i>P Buncic, M Gheata, Y Schutz</i>	
<b>PROOF ANALYSIS FRAMEWORK (PAF).....</b>	372
<i>J. Delgado Fernández, E. Fernández Del Castillo, I. González Caballero, A. Rodríguez Marrero</i>	
<b>DESIGNING COMPUTING SYSTEM ARCHITECTURE AND MODELS FOR THE HL-LHC ERA.....</b>	380
<i>L Bauerdick, B Bockelman, P Elmer, S Gowdy, M Tadel, F Würthwein</i>	
<b>RECENT EVOLUTION OF THE OFFLINE COMPUTING MODEL OF THE NOVA EXPERIMENT.....</b>	389
<i>Alec Habig, A. Norman</i>	
<b>FERMILAB COMPUTING AT THE INTENSITY FRONTIER.....</b>	395
<i>S. Fuess, O. Gutsche, M. Kirby, R. Kutschke, A. Lyon, A. Norman, G. Perdue, E. Sexton-Kennedy</i>	
<b>ANALYSIS PRESERVATION IN ATLAS.....</b>	405
<i>Kyle Cranmer, Lukas Heinrich, Roger Jones, David M. South</i>	
<b>THE CMS TIER0 GOES CLOUD AND GRID FOR LHC RUN 2.....</b>	410
<i>Dirk Hufnagel</i>	
<b>DATA PRESERVATION AT THE FERMILAB TEVATRON.....</b>	416
<i>J Boyd, K Herner, B Jayatilaka, R Roser, W Sakumoto</i>	
<b>THE OSG OPEN FACILITY: A SHARING ECOSYSTEM.....</b>	421
<i>B Jayatilaka, T Levshina, M Rynge, C Sehgal, M Slyz</i>	
<b>ATLAS DATA PRESERVATION.....</b>	427
<i>Rwl Jones, Dm South, Ks Cranmer</i>	
<b>PROGRESS IN MULTI-DISCIPLINARY DATA LIFE CYCLE MANAGEMENT.....</b>	431
<i>C Jung, M Gasthuber, A Giesler, M Hardt, J Meyer, A Prabhune, F Rigoll, K Schwarz, A Streit</i>	
<b>EVENT INDEX — AN LHC EVENT SEARCH SYSTEM.....</b>	439
<i>A Ustyuzhanin, A Artemov, N Kazeev, A Redkin</i>	
<b>DISTRIBUTED ANALYSIS IN ATLAS.....</b>	443
<i>A. Dewhurst, F. Legger</i>	
<b>EVOLUTION OF THE T2K-ND280 COMPUTING MODEL.....</b>	450
<i>Thomas Lindner</i>	

<b>A CASE STUDY IN PRESERVING A HIGH ENERGY PHYSICS APPLICATION WITH PARROT</b> .....	457
<i>H Meng, M Wolf, P Ivie, A Woodard, M Hildreth, D Thain</i>	
<b>LARGE SCALE MONTE CARLO SIMULATION OF NEUTRINO INTERACTIONS USING THE OPEN SCIENCE GRID AND COMMERCIAL CLOUDS</b> .....	465
<i>A Norman, J Boyd, G Davies, E Flumerfelt, K Hermer, N Mayer, P Mhashilhar, M Tamsett, S Timm</i>	
<b>LARGE SCALE MANAGEMENT OF PHYSICISTS PERSONAL ANALYSIS DATA WITHOUT EMPLOYING USER AND GROUP QUOTAS</b> .....	473
<i>A Norman, M Diesbug, M Gheith, R Illingworth, A Lyon, M Mengel</i>	
<b>OPTIMISING COSTS IN WLCG OPERATIONS</b> .....	482
<i>María Alandes Pradillo, Maria Dimou, Josep Flix, Alessandra Forti, Andrea Sciabà</i>	
<b>A REVIEW OF EVENT PROCESSING FRAMEWORKS USED IN HEP</b> .....	490
<i>E Sexton-Kennedy</i>	
<b>OPEN ACCESS TO HIGH-LEVEL DATA AND ANALYSIS TOOLS IN THE CMS EXPERIMENT AT THE LHC</b> .....	494
<i>A Calderon, D Colling, A Huffman, K Lassila-Perini, T McCauley, A Rao, A Rodriguez-Marrero, E Sexton-Kennedy</i>	
<b>ANALYSIS TRACEABILITY AND PROVENANCE FOR HEP</b> .....	501
<i>Jetendr Shamdasani, Richard McClatchey, Andrew Branson, Zsolt Kovács</i>	
<b>COMPUTING STRATEGY OF THE AMS EXPERIMENT</b> .....	509
<i>V Choutko, A Egorov, A Eline, B. S. Shan</i>	
<b>OPEN DATA AND DATA ANALYSIS PRESERVATION SERVICES FOR LHC EXPERIMENTS</b> .....	517
<i>J Cowton, S Dallmeier-Tiessen, P Fokianos, L Rueda, P Herterich, J Kuncar, T Šimko, T Smith</i>	
<b>THE VISPA INTERNET PLATFORM FOR OUTREACH, EDUCATION AND SCIENTIFIC RESEARCH IN VARIOUS EXPERIMENTS</b> .....	524
<i>D Van Asseldonk, M Erdmann, B Fischer, R Fischer, C Glaser, F Heidemann, G Müller, T Quast, M Rieger, M Urban, C Welling</i>	
<b>THE EVOLUTION OF CERN EDMS</b> .....	528
<i>Aleksandra Wardzinska, Stephan Petit, Rachel Bray, Christophe Delamare, Griselda Garcia Arza, Tsvetelin Krastev, Krzysztof Pater, Anna Suwalska, David Widegren</i>	
<b>MONITORING DATA TRANSFER LATENCY IN CMS COMPUTING OPERATIONS</b> .....	536
<i>D Bonacorsi, T Diotalevi, N Magini, A Sartirana, M Taze, T Wildish</i>	
<b>UNDERSTANDING THE T2 TRAFFIC IN CMS DURING RUN-1</b> .....	545
<i>Wildish T</i>	
<b>EXPLOITING VOLATILE OPPORTUNISTIC COMPUTING RESOURCES WITH LOBSTER</b> .....	553
<i>Anna Woodard, Matthias Wolf, Charles Mueller, Ben Tovar, Patrick Donnelly, Kenyi Hurtado Anampa, Paul Brenner, Kevin Lannon, Mike Hildreth, Douglas Thain</i>	
<b>BESIII PRODUCTION WITH DISTRIBUTED COMPUTING</b> .....	560
<i>X M Zhang, T Yan, X H Zhao, Z T Ma, X F Yan, T Lin, Z Y Deng, W D Li, S Belov, I Pelevanyuk, A Zhemchugov, H Cai</i>	
<b><u>DATA STORE AND ACCESS</u></b>	
<b>DATA HANDLING WITH SAM AND ART AT THE NO?A EXPERIMENT</b> .....	568
<i>A Aurisano, C Backhouse, G S Davies, R Illingworth, N Mayer, M Mengel, A Norman, D Rocco, J Zirnstein</i>	
<b>SCALE OUT DATABASES FOR CERN USE CASES</b> .....	573
<i>Zbigniew Baranowski, Maciej Grzybek, Luca Canali, Daniel Lanza Garcia, Kacper Surdy</i>	
<b>THE ATLAS EVENTINDEX: ARCHITECTURE, DESIGN CHOICES, DEPLOYMENT AND FIRST OPERATION EXPERIENCE</b> .....	582
<i>D Barberis, S. E. Cárdenas Zárate, J Cranshaw, A Favareto, Á. Fernández Casaní, E. J. Gallas, C. Glasman, S. González De La Hoz, J. Hrivnác, D. Malon, F. Prokoshin, J. Salt Cairols, J. Sánchez, R. Többsicke, R. Yuan</i>	
<b>EXPERIENCES ON FILE SYSTEMS: WHICH IS THE BEST FILE SYSTEM FOR YOU?</b> .....	590
<i>J Blomer</i>	
<b>EVOLUTION OF ATLAS CONDITIONS DATA AND ITS MANAGEMENT FOR LHC RUN-2</b> .....	597
<i>Michael Böhler, Mikhail Borodin, Andrea Formica, Elizabeth Gallas, Voica Radescu</i>	
<b>EXPERIENCES AND CHALLENGES RUNNING CERN'S HIGH CAPACITY TAPE ARCHIVE</b> .....	605
<i>Germán Cancio, Vladimír Bahyl, Daniele Francesco Kruse, Julien Leduc, Eric Cano, Steven Murray</i>	
<b>THE NEW CERN TAPE SOFTWARE - GETTING READY FOR TOTAL PERFORMANCE</b> .....	613
<i>E Cano, S Murray, D F Kruse, V Kotlyar, D Côme</i>	
<b>AN ANALYSIS OF STORAGE INTERFACE USAGES AT A LARGE, MULTIEXPERIMENT TIER 1</b> .....	621
<i>S. De Witt, M. Reggler</i>	

<b>ARCHITECTURES AND METHODOLOGIES FOR FUTURE DEPLOYMENT OF MULTI-SITE ZETTABYTE-EXASCALE DATA HANDLING PLATFORMS .....</b>	<b>628</b>
<i>V Acín, I Bird, T Boccali, G Cancio, I P Collier, D Corney, B Delaunay, M Delfino, L Dell'Agnello, J Flix, P Fuhrmann, M Gasthuber, V Gülzow, A Heiss, G Lamanna, P-E Macchi, M Maggi, B Matthews, C Neissner, J-Y Nief, M C Porto, A Sansum, M Schulz, J Shiers</i>	
<b>THE IMPORTANCE OF HAVING AN APPROPRIATE RELATIONAL DATA SEGMENTATION IN ATLAS .....</b>	<b>636</b>
<i>G Dimitrov</i>	
<b>OPERATIONAL EXPERIENCE RUNNING HADOOP XROOTD FALLBACK .....</b>	<b>644</b>
<i>J M Dost, A Tadel, M Tadel, F Würthwein</i>	
<b>ENGINEERING THE CERNVM-FILESYSTEM AS A HIGH BANDWIDTH DISTRIBUTED FILESYSTEM FOR AUXILIARY PHYSICS DATA .....</b>	<b>650</b>
<i>D Dykstra, B Bockelman, J Blomer, K Herner, T Levshina, M Slyz</i>	
<b>LOCAL STORAGE FEDERATION THROUGH XROOTD ARCHITECTURE FOR INTERACTIVE DISTRIBUTED ANALYSIS .....</b>	<b>657</b>
<i>F Colamaria, D Colella, G Donvito, D Elia, A Franco, G Luparello, G Maggi, G Miniello, S Vallero, G Vino</i>	
<b>NEW DATA ACCESS WITH HTTP/WEBDAV IN THE ATLAS EXPERIMENT .....</b>	<b>662</b>
<i>J Elmsheuser, R Walker, C Serfon, V Garonne, S Blunier, V Lavorini, P Nilsson</i>	
<b>DESIGNING A FUTURE CONDITIONS DATABASE BASED ON LHC EXPERIENCE .....</b>	<b>670</b>
<i>D Barberis, A Formica, E J Gallas, G Govi, G Lehman Miotto, A Pfeiffer</i>	
<b>A JEE RESTFUL SERVICE TO ACCESS CONDITIONS DATA IN ATLAS .....</b>	<b>678</b>
<i>Andrea Formica, E J Gallas</i>	
<b>USER AND GROUP STORAGE MANAGEMENT THE CMS CERN T2 CENTRE .....</b>	<b>683</b>
<i>G. Cerminara, G. Franzoni, A. Pfeiffer</i>	
<b>DIRECT DATA ACCESS PROTOCOLS BENCHMARKING ON DPM .....</b>	<b>688</b>
<i>Fabrizio Furano, Adrien Devresse, Oliver Keeble, Valentina Mancinelli</i>	
<b>TESTS OF PROOF-ON-DEMAND WITH ATLAS PRODSYS2 AND FIRST EXPERIENCE WITH HTTP FEDERATION .....</b>	<b>694</b>
<i>R. Di Nardo, G. Ganis, E. Vilucchi, P. Albicocco, M. Antonelli</i>	
<b>EXPERIENCE IN RUNNING RELATIONAL DATABASES ON CLUSTERED STORAGE .....</b>	<b>701</b>
<i>Ruben Gaspar Aparicio, Miroslav Potocky</i>	
<b>DATABASE ON DEMAND: INSIGHT HOW TO BUILD YOUR OWN DBAAS .....</b>	<b>709</b>
<i>Ruben Gaspar Aparicio, Ignacio Coterillo Coz</i>	
<b>DISTRIBUTED DATA MANAGEMENT AND DISTRIBUTED FILE SYSTEMS .....</b>	<b>717</b>
<i>Maria Girone</i>	
<b>STUDIES OF BIG DATA METADATA SEGMENTATION BETWEEN RELATIONAL AND NON-RELATIONAL DATABASES .....</b>	<b>725</b>
<i>M V Golosova, M A Grigorieva, A A Klimentov, E A Ryabinkin, G Dimitrov, M Potekhin</i>	
<b>THE CMS CONDITION DATABASE SYSTEM .....</b>	<b>733</b>
<i>S. Di Guida, G. Govi, M. Ojeda, A. Pfeiffer, R Sipos</i>	
<b>THE DIRAC DATA MANAGEMENT SYSTEM AND THE GAUDI DATASET FEDERATION .....</b>	<b>739</b>
<i>Christophe Haen, Philippe Charpentier, Markus Frank, Andrei Tsaregorodtsev</i>	
<b>DISK STORAGE MANAGEMENT FOR LHCb BASED ON DATA POPULARITY ESTIMATOR .....</b>	<b>751</b>
<i>Mikhail Hushchyn, Philippe Charpentier, Andrey Ustyuzhanin</i>	
<b>CURRENT STATUS OF THE CEPH BASED STORAGE SYSTEMS AT THE RACF .....</b>	<b>759</b>
<i>A. Zaytsev, H. Ito, C. Hollowell, T. Wong, T. Rao</i>	
<b>FILE ACCESS OPTIMIZATION WITH THE LUSTRE FILESYSTEM AT FLORIDA CMS T2 .....</b>	<b>767</b>
<i>P. Avery, D. Bourilkov, Y. Fu, B. Kim</i>	
<b>DATA PRESERVATION FOR THE HERA EXPERIMENTS AT DESY USING DCACHE TECHNOLOGY .....</b>	<b>774</b>
<i>Dirk Krücker, Karsten Schwank, Patrick Fuhrmann, Birgit Lewendel, David M. South</i>	
<b>DIRECTORY SEARCH PERFORMANCE OPTIMIZATION OF AMGA FOR THE BELLE II EXPERIMENT .....</b>	<b>779</b>
<i>Geunchul Park, Jae-Hyuck Kwak, Taesang Huh, Soonwook Hwang</i>	
<b>POSIX AND OBJECT DISTRIBUTED STORAGE SYSTEMS PERFORMANCE COMPARISON STUDIES WITH REAL-LIFE SCENARIOS IN AN EXPERIMENTAL DATA TAKING CONTEXT LEVERAGING OPENSTACK SWIFT &amp; CEPH .....</b>	<b>786</b>
<i>M D Poat, J Lauret, W Betts</i>	
<b>EVOLUTION OF DATABASE REPLICATION TECHNOLOGIES FOR WLCG .....</b>	<b>795</b>
<i>Zbigniew Baranowski, Lorena Lobato Pardavila, Marcin Blaszczyk, Gancho Dimitrov, Luca Canali</i>	
<b>ATLAS I/O PERFORMANCE OPTIMIZATION IN AS-DEPLOYED ENVIRONMENTS .....</b>	<b>804</b>
<i>T Maier, D Benjamin, W Bhimji, J Elmsheuser, P Van Gemmeren, D Malon, N Krumnack</i>	

<b>BIG DATA ANALYTICS AS A SERVICE INFRASTRUCTURE: CHALLENGES, DESIRED PROPERTIES AND SOLUTIONS</b> .....	812
<i>Manuel Martín-Márquez</i>	
<b>DISK STORAGE AT CERN</b> .....	819
<i>L Mascetti, E Cano, B Chan, X Espinal, A Fiorot, H González Labrador, J Iven, M Lamanna, G Lo Presti, Jt Moscicki, Aj Peters, S Ponce, H Rousseau, D Van Der Ster</i>	
<b>EVALUATION OF NOSQL DATABASES FOR DIRAC MONITORING AND BEYOND</b> .....	826
<i>Z Mathe, A Casajus Ramo, F. Stagni, L. Tomassetti</i>	
<b>UNLOCKING DATA: FEDERATED IDENTITY WITH LSDMA AND DCACHE</b> .....	834
<i>Ap Millar, G Behrmann, C Bernardt, P Fuhrmann, M Hardt, A Hayrapetyan, D Litvintsev, T Mkrтчhyan, A Rossi, K Schwank</i>	
<b>DCACHE, SYNC-AND-SHARE FOR BIG DATA</b> .....	838
<i>Ap Millar, P Fuhrmann, T Mkrтчhyan, G Behrmann, C Bernardt, Q Buchholz, V Guelzow, D Litvintsev, K Schwank, A Rossi, P Van Der Reest</i>	
<b>ARCHIVING SCIENTIFIC DATA OUTSIDE OF THE TRADITIONAL HEP DOMAIN, USING THE ARCHIVE FACILITIES AT FERMILAB</b> .....	843
<i>A. Norman, M. Diesbug, M. Gheith, R. Illingworth, M. Mengel</i>	
<b>EVOLUTION OF THE ARCHITECTURE OF THE ATLAS METADATA INTERFACE (AMI)</b> .....	851
<i>J Odier, O Aidel, S Albrand, J Fulachier, F Lambert</i>	
<b>IMPROVEMENT OF AMGA PYTHON CLIENT LIBRARY FOR BELLE II EXPERIMENT</b> .....	857
<i>Jae-Hyuck Kwak, Geunchul Park, Taesang Huh, Soonwook Hwang</i>	
<b>EOS AS THE PRESENT AND FUTURE SOLUTION FOR DATA STORAGE AT CERN</b> .....	864
<i>Aj Peters, Ea Sindrilaru, G Adde</i>	
<b>INTEGRATING NEW STORAGE TECHNOLOGIES INTO EOS</b> .....	871
<i>Andreas J. Peters, Dan C. Van Der Ster, Joaquim Rocha, Paul Lensing</i>	
<b>MULTI-THREADED OBJECT STREAMING</b> .....	879
<i>Salvatore Di Guida, Giacomo Govi, Miguel Ojeda, Andreas Pfeiffer, Roland Sipos</i>	
<b>INTEGRATION OF THE EVENTINDEX WITH OTHER ATLAS SYSTEMS</b> .....	885
<i>D. Barberis, S. E. Cárdenas Zárate, E. J. Gallas, F. Prokoshin</i>	
<b>DISTRIBUTED DATA COLLECTION FOR THE ATLAS EVENTINDEX</b> .....	891
<i>J Sánchez, A Fernández Casaní, S González De La Hoz</i>	
<b>AN INTEGRATED SOLUTION FOR REMOTE DATA ACCESS</b> .....	899
<i>Vladimir Sapunenko, Domenico D'Urso, Luca Dell'Agnello, Vincenzo Vagnoni, Matteo Duranti</i>	

## PART 2

<b>TRANSPARENT HANDLING OF SMALL FILES WITH DCACHE TO OPTIMIZE TAPE ACCESS</b> .....	905
<i>Karsten Schwank, Dirk Krücker, Patrick Fuhrmann, Tigran Mkrтчhyan, Paul Millar, Dmitry Litventsev</i>	
<b>ARCHIVING TOOLS FOR EOS</b> .....	908
<i>Elvin-Alin Sindrilaru, Andreas-Joachim Peters, Dirk Duellmann</i>	
<b>NOSQL TECHNOLOGIES FOR THE CMS CONDITIONS DATABASE</b> .....	914
<i>Roland Sipos</i>	
<b>EXTENDING DIRAC FILE MANAGEMENT WITH ERASURE-CODING FOR EFFICIENT STORAGE</b> .....	922
<i>Samuel Cadellin Skipsey, Paulin Todev, David Britton, David Crooks, Gareth Roy</i>	
<b>ENABLING OBJECT STORAGE VIA SHIMS FOR GRID MIDDLEWARE</b> .....	929
<i>Samuel Cadellin Skipsey, Shaun De Witt, Alastair Dewhurst, David Britton, Gareth Roy, David Crooks</i>	
<b>ASAP3 - NEW DATA TAKING AND ANALYSIS INFRASTRUCTURE FOR PETRA III</b> .....	937
<i>M Strutz, M Gasthuber, S Aplin, S Dietrich, M Kuhn, U Ensslin, G Smirnov, B Lewendel, V Guelzow</i>	
<b>CEPH-BASED STORAGE SERVICES FOR RUN2 AND BEYOND</b> .....	945
<i>Daniel C. Van Der Ster, Massimo Lamanna, Luca Mascetti, Andreas J. Peters, Hervé Rousseau</i>	
<b>COMPREHENSIVE MONITORING FOR HETEROGENEOUS GEOGRAPHICALLY DISTRIBUTED STORAGE</b> .....	949
<i>N Ratnikova, E Karavakis, S Lammel, T Wildish</i>	
<b>POOLING THE RESOURCES OF THE CMS TIER-1 SITES</b> .....	955
<i>A Apyan, J Badillo, J Diaz Cruz, S Gadrat, O Gutsche, B Holzman, A Lahiff, N Magini, D Mason, A Perez, F Stober, S Taneja, M Taze, C Wissing</i>	
<b>MEAN PB TO FAILURE - INITIAL RESULTS FROM A LONG-TERM STUDY OF DISK STORAGE PATTERNS AT THE RACF</b> .....	962
<i>C Caramarcu, C Hollowell, T Rao, W Strecker-Kellogg, A Wong, S A Zaytsev</i>	



<b>SHARING LATTICE QCD DATA OVER A WIDELY DISTRIBUTED FILE SYSTEM</b> .....	968
<i>T Amagasa, S Aoki, Y Aoki, T Aoyama, T Doi, K Fukumura, N Ishii, K.-I Ishikawa, H Jitsumoto, H Kamano, Y Konno, H Matsufuru, Y Mikami, K Miura, M Sato, S Takeda, O Tatebe, H Togawa, A Ukawa, N Ukita, Y Watanabe, T Yamazaki, T Yoshie</i>	

## **FACILITIES, INFRASTRUCTURE, NETWORK**

<b>HIGH-SPEED MOBILE COMMUNICATIONS IN HOSTILE ENVIRONMENTS</b> .....	976
<i>S Agosta, R Sierra, F Chapron</i>	
<b>MONITORING EVOLUTION AT CERN</b> .....	981
<i>P. Andrade, B. Fiorini, S. Murphy, L. Pigueiras, M. Santos</i>	
<b>INTEGRATING NETWORK AND TRANSFER METRICS TO OPTIMIZE TRANSFER EFFICIENCY AND EXPERIMENT WORKFLOWS</b> .....	987
<i>S. McKee, M. Babik, S. Campana, A. Di Girolamo, T. Wildish, J. Closier, S. Roiser, C. Grigoras, I. Vukotic, M. Salichos, Kaushik De, V. Garonne, J. A. D. Cruz, A. Forti, C. J. Walker, D. Rand, A. De Salvo, E. Mazzoni, I. Gable, F. Chollet, L. Caillat, F. Schaer, Hsin-Yen Chen, U. Tigerstedt, G. Duckeck, B. Hoefft, A. Petzold, F. Lopez, J. Flix, S. Stancu, J. Shade, M. O'Connor, V. Kotlyar, J. Zurawski</i>	
<b>EXPERIENCE OF PUBLIC PROCUREMENT OF OPEN COMPUTE SERVERS</b> .....	995
<i>Olof Barring, Marco Guerri, Eric Bonfillou, Liviu Valsan, Alexandru Grigore, Vincent Dore, Alain Gentit, Benoît Clement, Anthony Grossir</i>	
<b>THE GÉANT NETWORK: ADDRESSING CURRENT AND FUTURE NEEDS OF THE HEP COMMUNITY</b> .....	1001
<i>Vincenzo Capone, Mian Usman</i>	
<b>GRIDPP - PREPARING FOR LHC RUN 2 AND THE WIDER CONTEXT</b> .....	1009
<i>Jeremy Coles</i>	
<b>PUBLIC OUTREACH AT RAL: ENGAGING THE NEXT GENERATION OF SCIENTISTS AND ENGINEERS</b> .....	1017
<i>G Corbett, G Ryall, S Palmer, I P Collier, J Adams, R Appleyard</i>	
<b>EFFICIENT PROVISIONING FOR MULTI-CORE APPLICATIONS WITH LSF</b> .....	1023
<i>Stefano Dal Pra</i>	
<b>FREE COOLING ON THE MEDITERRANEAN SHORE: ENERGY EFFICIENCY UPGRADES AT PIC</b> .....	1030
<i>V Acin, M Delfino, A Herbera, J. Hernández</i>	
<b>OFFERING GLOBAL COLLABORATION SERVICES BEYOND CERN AND HEP</b> .....	1038
<i>J Fernandes, P Ferreira, T Baron</i>	
<b>VIDYO@CERN: A SERVICE UPDATE</b> .....	1043
<i>J Fernandes, T Baron</i>	
<b>INDICO — THE ROAD TO 2.0</b> .....	1050
<i>P Ferreira, A Avilés, J Dafflon, A Mönnich, I Trichopoulos</i>	
<b>RUNNING AND TESTING GRID SERVICES WITH PUPPET AT GRIF- IRFU</b> .....	1058
<i>S Ferry, F Schaer, Jp Meyer</i>	
<b>GETTING PREPARED FOR THE LHC RUN2: THE PIC TIER-1 CASE</b> .....	1065
<i>J Flix, E Acción, V Acin, C Acosta, J Casals, M Caubet, R Cruz, M Delfino, F López, A Pacheco, A Pérez-Calero Yzquierdo, E Planas, M Porto, B Rodríguez, A Sedov</i>	
<b>THE ATLAS PUBLIC WEB PAGES: ONLINE MANAGEMENT OF HEP EXTERNAL COMMUNICATION CONTENT</b> .....	1073
<i>S Goldfarb, C Marcelloni, A Eli Phoboo, K Shaw</i>	
<b>SPANISH ATLAS TIER-2: FACING UP TO LHC RUN 2</b> .....	1081
<i>S González De La Hoz, J Del Peso, F Fassi, A Fernández Casani, M Kaci, V Lacort Pellicer, A Del Rocio Montiel, E Oliver, A Pacheco Pages, J Sánchez, V Sánchez Martínez, J Salt, M Villaplana</i>	
<b>100G DEPLOYMENT@(DE-KIT)</b> .....	1089
<i>Bruno Hoefft, Andreas Petzold</i>	
<b>THE PRODUCTION DEPLOYMENT OF IPV6 ON WLCG</b> .....	1097
<i>J Bernier, S Campana, K Chadwick, J Chudoba, A Dewhurst, M Eliáš, S Fayer, T Finnern, C Grigoras, T Hartmann, B Hoefft, T Idiculla, D P Kelsey, F López Muñoz, E Macmahon, E Martelli, A P Millar, R Nandakumar, K Ohrenberg, F Prelz, D Rand, A Sciabà, U Tigerstedt, R Voicu, C J Walker, T Wildish</i>	
<b>ACTIVE JOB MONITORING IN PILOTS</b> .....	1105
<i>Eileen Kuehn, Max Fischer, Manuel Giffels, Christopher Jung, Andreas Petzold</i>	
<b>CONFIGURATION MANAGEMENT AND INFRASTRUCTURE MONITORING USING CFENGINE AND ICINGA FOR REAL-TIME HETEROGENEOUS DATA TAKING ENVIRONMENT</b> .....	1113
<i>M D Poat, J Laurent, W Betts</i>	

<b>MODULAR AND SCALABLE RESTFUL API TO SUSTAIN STAR COLLABORATION'S RECORD KEEPING</b> .....	1119
<i>D Arkhipkin, J Lauret, P V Shanmuganathan</i>	
<b>REPRODUCIBLE EXPERIMENT PLATFORM</b> .....	1126
<i>Tatiana Likhomanenko, Alex Rogozhnikov, Alexander Baranov, Egor Khairullin, Andrey Ustyuzhanin</i>	
<b>MONITORING WLCG WITH LAMBDA-ARCHITECTURE: A NEW SCALABLE DATA STORE AND ANALYTICS PLATFORM FOR MONITORING AT PETABYTE SCALE</b> .....	1132
<i>L Magnoni, U Suthakar, C Cordeiro, M Georgiou, J Andreeva, A Khan, D R Smith</i>	
<b>AUTOMATION OF LARGE-SCALE COMPUTER CLUSTER MONITORING INFORMATION ANALYSIS</b> .....	1140
<i>Erekle Magradze, Jordi Nadal, Arnulf Quadt, Gen Kawamura, Haykuhi Musheghyan</i>	
<b>LHCOPN AND LHCONE: STATUS AND FUTURE EVOLUTION</b> .....	1148
<i>E Martelli, S Stancu</i>	
<b>INTEGRATING PUPPET AND GITOLITE TO PROVIDE A NOVEL SOLUTION FOR SCALABLE SYSTEM MANAGEMENT AT THE MPPMU TIER2 CENTRE</b> .....	1155
<i>C Delle Fratte, J A Kennedy, S Kluth, L Mazzaferro</i>	
<b>IDENTIFYING AND LOCALIZING NETWORK PROBLEMS USING THE PUNDIT PROJECT</b> .....	1162
<i>Jorge Batista, Constantine Dovrolis, Danny Lee, Shawn McKee</i>	
<b>BELLE II PRODUCTION SYSTEM</b> .....	1170
<i>Hideki Miyake, Rafal Grzymkowski, Radek Ludacka, Malachi Schram</i>	
<b>ANALYSIS OF CERN COMPUTING INFRASTRUCTURE AND MONITORING DATA</b> .....	1176
<i>C Nieke, M Lassnig, L Menichetti, E Motesnitsalis, D Duellmann</i>	
<b>A FIRST LOOK AT 100 GBPS LAN TECHNOLOGIES, WITH AN EMPHASIS ON FUTURE DAQ APPLICATIONS</b> .....	1184
<i>Adam Otto, Daniel Hugo Cámpora Pérez, Niko Neufeld, Rainer Schwemmer, Flavio Pisani</i>	
<b>POSSIBILITIES FOR NAMED DATA NETWORKING IN HEP</b> .....	1191
<i>Duncan Rand, Simon Fayer, David J. Colling</i>	
<b>BENCHMARK OF A CUBIEBOARD CLUSTER</b> .....	1195
<i>M J Schnepf, D Gudu, B Rische, M Fischer, C Jung, M Hardt</i>	
<b>NAMED DATA NETWORKING IN CLIMATE RESEARCH AND HEP APPLICATIONS</b> .....	1202
<i>Susmit Shannigrahi, Christos Papadopoulos, Edmund Yeh, Harvey Newman, Artur Jerzy Barczyk, Ran Liu, Alex Sim, Azher Mughal, Inder Monga, Jean-Roch Vlimant, John Wu</i>	
<b>TILE-IN-ONE: A WEB PLATFORM WHICH INTEGRATES TILE CALORIMETER DATA QUALITY AND CALIBRATION ASSESSMENT</b> .....	1210
<i>A. Sivolella, F. Ferreira, C. Maidantchik, C. Solans, A. Solodkov, B. Burghgrave, Y. Smirnov</i>	
<b>BENEFITS OF ENTERPRISE SOCIAL NETWORKING SYSTEMS FOR HIGH ENERGY PHYSICS COMMUNITY</b> .....	1218
<i>B Silva De Sousa, A Wagner, E Ormancey, P Grzywaczewski</i>	
<b>RENOVATION OF HEPNET-J FOR NEAR-FUTURE EXPERIMENTS</b> .....	1226
<i>Soh Y. Suzuki, Fukuko Yuasa, Tomoaki Nakamura, Takanori Hara</i>	
<b>THE ALICE GLANCE SHIFT ACCOUNTING MANAGEMENT SYSTEM (SAMS)</b> .....	1231
<i>H. Martins Silva, I. Abreu Da Silva, F. Ronchetti, A. Telesca, C. Maidantchik</i>	
<b>SCHEDULING MULTICORE WORKLOAD ON SHARED MULTIPURPOSE CLUSTERS</b> .....	1239
<i>J A Templon, C Acosta-Silva, J Flix Molina, A C Forti, A Pérez-Calero Yzquierdo, R Starink</i>	
<b>TOWARDS A 21ST CENTURY TELEPHONE EXCHANGE AT CERN</b> .....	1247
<i>F Valentín, A Hesnaux, R Sierra, F Chapron</i>	
<b>A MODEL TO FORECAST DATA CENTRE INFRASTRUCTURE COSTS</b> .....	1254
<i>R Vernet</i>	
<b>OPTIMISATION OF THE USAGE OF LHC AND LOCAL COMPUTING RESOURCES IN A MULTIDISCIPLINARY PHYSICS DEPARTMENT HOSTING A WLCG TIER-2 CENTRE</b> .....	1261
<i>Stefano Barberis, Leonardo Carminati, Franco Leveraro, Simone Michele Mazza, Laura Perini, Francesco Perlz, David Rebatto, Ruggero Tura, Luca Vaccarossa, Miguel Villaplana</i>	
<b>APPLYING DEEP NEURAL NETWORKS TO HEP JOB CLASSIFICATION</b> .....	1266
<i>L Wang, J Shi, X Yan</i>	
<b>BANDWIDTH-SHARING IN LHCONE, AN ANALYSIS OF THE PROBLEM</b> .....	1274
<i>T Wildish</i>	

**MIDDLEWARE, SOFTWARE DEVELOPMENT AND TOOLS, EXPERIMENT FRAMEWORKS,  
TOOLS FOR DISTRIBUTED COMPUTING**

<b>AGIS: EVOLUTION OF DISTRIBUTED COMPUTING INFORMATION SYSTEM FOR ATLAS .....</b>	<b>1282</b>
<i>A Anisenkov, A Di Girolamo, M Alandes, E Karavakis</i>	
<b>RESOURCE CONTROL IN ATLAS DISTRIBUTED DATA MANAGEMENT: RUCIO ACCOUNTING AND QUOTAS .....</b>	<b>1289</b>
<i>M Barisits, C Serfon, V Garonne, M Lassnig, T Beermann, R Vigne</i>	
<b>COMMISSIONING THE HTCONDOR-CE FOR THE OPEN SCIENCE GRID.....</b>	<b>1297</b>
<i>B Bockelman, T Cartwright, J Frey, E M Fajardo, B Lin, M Selmeci, T Tannenbaum, M Zvada</i>	
<b>IMPROVED ATLAS HAMMERCLOUD MONITORING FOR LOCAL SITE ADMINISTRATION .....</b>	<b>1305</b>
<i>M Böhler, J Elmsheuser, F Hönig, F Legger, V Mancinelli, G Sciacca</i>	
<b>SCALING UP ATLAS PRODUCTION SYSTEM FOR THE LHC RUN 2 AND BEYOND: PROJECT PRODSYS2 .....</b>	<b>1313</b>
<i>M Borodin, K De, J Garcia, Navarro, D Golubkov, A Klimentov, T Maeno, A Vaniachine</i>	
<b>ROOT 6 AND BEYOND: TOBJECT, C++14 AND MANY CORES. ....</b>	<b>1321</b>
<i>B Bellenot, Ph Canal, O Couet, G Ganis, P Mato, L Moneta, A. Naumann, D. Piparo</i>	
<b>IMPLEMENTING A DOMAIN SPECIFIC LANGUAGE TO CONFIGURE AND RUN LHCb CONTINUOUS INTEGRATION BUILDS .....</b>	<b>1329</b>
<i>M Clemencic, B Couturier</i>	
<b>LHCb BUILD AND DEPLOYMENT INFRASTRUCTURE FOR RUN 2.....</b>	<b>1335</b>
<i>M. Clemencic, B. Couturier</i>	
<b>THE GRIDPP DIRAC PROJECT: IMPLEMENTATION OF A MULTI-VO DIRAC SERVICE.....</b>	<b>1341</b>
<i>D Bauer, D Colling, R Currie, S Fayer, A Huffman, J Martyniak, D Rand, A Richards</i>	
<b>RECENT DEVELOPMENTS IN USER-JOB MANAGEMENT WITH GANGA.....</b>	<b>1345</b>
<i>R Currie, J Elmsheuser, R Fay, P H Owen, A Richards, M Slater, W Sutcliffe, M Williams</i>	
<b>SOFTWARE MANAGEMENT FOR THE NO?AEXPERIMENT .....</b>	<b>1350</b>
<i>G. S Davies, J. P Davies, C Group, B Rebel, K Sachdev, J Zirnstein</i>	
<b>THE ATLAS SOFTWARE INSTALLATION SYSTEM V2: A HIGHLY AVAILABLE SYSTEM TO INSTALL AND VALIDATE GRID AND CLOUD SITES VIA PANDA.....</b>	<b>1355</b>
<i>A De Salvo, M Kataoka, A Sanchez Pineda, Y Smirnov</i>	
<b>OPTIMIZING CMS BUILD INFRASTRUCTURE VIA APACHE MESOS .....</b>	<b>1363</b>
<i>David Abdurachmanov, Alessandro Degano, Peter Elmer, Giulio Eulisse, David Mendez, Shahzad Muzaffar</i>	
<b>HOW MUCH HIGHER CAN HTCONDOR FLY? .....</b>	<b>1369</b>
<i>E M Fajardo, J M Dost, B Holzman, T Tannenbaum, J Letts, A Tiradani, B Bockelman, J Frey, D Mason</i>	
<b>DYNAMIC RESOURCE ALLOCATION WITH THE ARCCONTROLTOWER .....</b>	<b>1377</b>
<i>A Filipcic, D Cameron, J K Nilsen</i>	
<b>MULTICORE JOB SCHEDULING IN THE WORLDWIDE LHC COMPUTING GRID .....</b>	<b>1383</b>
<i>A Forti, A Pérez-Calero Yzquierdo, T Hartmann, M Alef, A Lahiff, J Templon, S Dal Pra, M Gila, S Skipsey, C Acosta-Silva, A Filipcic, R Walker, C J Walker, D Traynor, S Gadrat</i>	
<b>INTRUSION PREVENTION AND DETECTION IN GRID COMPUTING - THE ALICE CASE.....</b>	<b>1391</b>
<i>Andres Gomez, Camilo Lara, Udo Kobschull</i>	
<b>EXTENDING SOFTWARE REPOSITORY HOSTING TO CODE REVIEW AND TESTING .....</b>	<b>1398</b>
<i>A. Gonzalez Alvarez, B. Aparicio Cotarelo, A. Lossent, T. Andersen, A. Trzcinska, D. Asbury, N. Hlimyr, H. Meinhard</i>	
<b>RESILIENT FTS3 SERVICE AT GRIDKA .....</b>	<b>1405</b>
<i>T. Hartmann, J. Bubeliene, B. Hoefl, L. Obholz, A. Petzold, K. Wisniewski</i>	
<b>MONITORING SYSTEM FOR THE BELLE II DISTRIBUTED COMPUTING .....</b>	<b>1412</b>
<i>Kiyoshi Hayasaka</i>	
<b>GEANT4 COMPUTING PERFORMANCE BENCHMARKING AND MONITORING .....</b>	<b>1416</b>
<i>Andrea Dotti, V. Daniel Elvira, Gunter Folger, Krzysztof Genser, Soon Yung Jun, James B. Kowalkowski, Marc Paterno</i>	
<b>GLEXEC INTEGRATION WITH THE ATLAS PANDA WORKLOAD MANAGEMENT SYSTEM.....</b>	<b>1424</b>
<i>E Karavakis, F Barreiro, S Campana, K De, A Di Girolamo, M Litmaath, T Maeno, R Medrano, P Nilsson, T Wenaus</i>	
<b>JOB MONITORING ON DIRAC FOR BELLE II DISTRIBUTED COMPUTING .....</b>	<b>1431</b>
<i>Yuji Kato, Kiyoshi Hayasaka, Takanori Hara, Hideki Miyake, Ikuo Ueda</i>	
<b>SOFTWARE DEVELOPMENT AT BELLE II.....</b>	<b>1436</b>
<i>Thomas Kuhr, Thomas Hauth</i>	

<b>IMPROVEMENTS TO THE USER INTERFACE FOR LHCB'S SOFTWARE CONTINUOUS INTEGRATION SYSTEM.</b> .....	1443
<i>M. Clemencic, B. Couturier, S. Kyriazi</i>	
<b>AN OBJECT-ORIENTED APPROACH TO DEPLOYING HIGHLY CONFIGURABLE WEB INTERFACES FOR THE ATLAS EXPERIMENT</b> .....	1449
<i>Bruno Lange, Carmen Maidantchik, Kathy Pommès, Varlen Pavani, Breno Arosa, Igor Abreu</i>	
<b>SCALABLE AND FAIL-SAFE DEPLOYMENT OF THE ATLAS DISTRIBUTED DATA MANAGEMENT SYSTEM RUCIO</b> .....	1457
<i>M Lassnig, R Vigne, T Beermann, M Barisits, V Garonne, C Serfon</i>	
<b>MONITORING AND CONTROLLING ATLAS DATA MANAGEMENT: THE RUCIO WEB USER INTERFACE</b> .....	1465
<i>M Lassnig, T Beermann, R Vigne, M Barisits, V Garonne, C Serfon</i>	
<b>PYTHON IN THE CLING WORLD</b> .....	1473
<i>W Lavrijsen</i>	
<b>PUSHING HTCONDOR AND GLIDEINWMS TO 200K+ JOBS IN A GLOBAL POOL FOR CMS BEFORE RUN 2</b> .....	1478
<i>J Balcas, S Belforte, B Bockelman, O Gutsche, F Khan, K Larson, J Letts, M Mascheroni, D Mason, A McCrea, M Saiz-Santos, I Sfiligoi</i>	
<b>USING THE GLIDEINWMS SYSTEM AS A COMMON RESOURCE PROVISIONING LAYER IN CMS</b> .....	1485
<i>J Balcas, S Belforte, B Bockelman, D Colling, O Gutsche, D Hufnagel, F Khan, K Larson, J Letts, M Mascheroni, D Mason, A McCrea, S Piperov, M Saiz-Santos, I Sfiligoi, A Tanasijczuk, C Wissing</i>	
<b>THHTTPSERVER CLASS IN ROOT</b> .....	1493
<i>Joern Adamczewski-Musch, Sergey Linev</i>	
<b>JAVASCRIPT ROOT</b> .....	1501
<i>Bertrand Bellenot, Sergey Linev</i>	
<b>SUBLENOISE: SONIFICATION OF DISTRIBUTED COMPUTING OPERATIONS</b> .....	1505
<i>P A Love</i>	
<b>THE FUTURE OF PANDA IN ATLAS DISTRIBUTED COMPUTING</b> .....	1509
<i>K De, A Klimentov, T Maeno, P Nilsson, D Oleynik, S Panitkin, A Petrosyan, J Schovancova, A Vaniachine, T Wenaus</i>	
<b>THE GRIDPP DIRAC PROJECT - DIRAC FOR NON-LHC COMMUNITIES</b> .....	1516
<i>D Bauer, D Colling, R Currie, S Fayer, A Huffman, J Martyniak, D Rand, A Richards</i>	
<b>CERNBOX + EOS: END-USER STORAGE FOR SCIENCE</b> .....	1520
<i>L Mascetti, H Gonzalez Labrador, M Lamanna, Jt Moscicki, Aj Peters</i>	
<b>CMS DISTRIBUTED DATA ANALYSIS WITH CRAB3</b> .....	1526
<i>M Mascheroni, J Balcas, S Belforte, B P Bockelman, J M Hernandez, D Ciangottini, P B Konstantinov, J M D Silva, M A B M Ali, A M Melo, H Riahi, A J Tanasijczuk, M N B Yusli, M Wolf, A E Woodard, E Vaandering</i>	
<b>THE DIRAC WEB PORTAL 2.0</b> .....	1534
<i>Z Mathe, A Casajus Ramo, N. Lazovsky, F. Stagni</i>	
<b>PROGRESS ON THE FABRIC FOR FRONTIER EXPERIMENTS PROJECT AT FERMILAB</b> .....	1542
<i>Dennis Box, Joseph Boyd, Dave Dykstra, Gabriele Garzoglio, Kenneth Herner, Michael Kirby, Arthur Kreymer, Tanya Levshina, Parag Mhashilkar, Neha Sharma</i>	
<b>HAPPYFACE AS A GENERIC MONITORING TOOL FOR HEP EXPERIMENTS</b> .....	1550
<i>Gen Kawamura, Erekle Magradze, Haykuhi Musheghyan, Arnulf Quadt, Gerhard Rzehorz</i>	
<b>ARC CONTROL TOWER: A FLEXIBLE GENERIC DISTRIBUTED JOB MANAGEMENT FRAMEWORK</b> .....	1556
<i>J. K. Nilsen, D. Cameron, A. Filipic</i>	
<b>RE-ENGINEERING SAM OR CHANGING THE ENGINE IN THE TRAIN WHILE IT IS RUNNING</b> .....	1564
<i>R. Illingworth, M. Mengel, A. Norman</i>	
<b>MIGRATION OF THE ATLAS METADATA INTERFACE (AMI) TO WEB 2.0 AND CLOUD</b> .....	1571
<i>J Odier, S Albrand, J Fulachier, F Lambert</i>	
<b>EVENT-DRIVEN MESSAGING FOR OFFLINE DATA QUALITY MONITORING AT ATLAS</b> .....	1577
<i>Peter Onyisi</i>	
<b>EVOLUTION OF CMS WORKLOAD MANAGEMENT TOWARDS MULTICORE JOB SUPPORT</b> .....	1582
<i>A Pérez-Calero Yzquierdo, J M Hernández, F A Khan, J Letts, K Majewski, A M Rodrigues, A McCrea, E Vaandering</i>	
<b>TESTABLE PHYSICS BY DESIGN</b> .....	1590
<i>Chansoo Choi, Min Cheol Han, Gabriela Hoff, Chan Hyeong Kim, Sung Hun Kim, Maria Grazia Pia, Paolo Saracco, Georg Weidenspointner</i>	
<b>HOW DO PARTICLE PHYSICISTS LEARN THE PROGRAMMING CONCEPTS THEY NEED?</b> .....	1598
<i>S Kluth, M G Pia, T Schoerner-Sadenius, P Steinbach</i>	

<b>ROOT6: A QUEST FOR PERFORMANCE</b> .....	1606
<i>Danilo Piparo</i>	
<b>A HISTORY-BASED ESTIMATION FOR LHCb JOB REQUIREMENTS</b> .....	1613
<i>Nathalie Rauschmayr</i>	
<b>FTS3: QUANTITATIVE MONITORING</b> .....	1620
<i>H Riahi, M Salichos, O Keeble, J Andreeva, A A Ayllon, A Di Girolamo, N Magini, S Roiser, M K Simon</i>	
<b>ASYNCSTAGEOUT: DISTRIBUTED USER DATA MANAGEMENT FOR CMS ANALYSIS</b> .....	1629
<i>H Riahi, T Wildish, D Ciangottini, J M Hernández, J Andreeva, J Balcas, E Karavakis, M Mascheroni, A J Tanasijczuk, E W Vaandering</i>	
<b>FIRST STATISTICAL ANALYSIS OF GEANT4 QUALITY SOFTWARE METRICS</b> .....	1638
<i>Elisabetta Ronchieri, Maria Grazia Pia, Francesco Giacomini</i>	
<b>WLCG MONITORING CONSOLIDATION AND FURTHER EVOLUTION</b> .....	1646
<i>P Saiz, A Aimar, J Andreeva, M Babik, L Cons, I Dzhanov, A Forti, A Di Girolamo, E Karavakis, M Litmaath, N Magini, L Magnoni, H Martin De Los Rios, S Roiser, A Sciaba, M Schulz, J Tarragon, D Tuckett</i>	
<b>A VALIDATION SYSTEM FOR THE COMPLEX EVENT PROCESSING DIRECTIVES OF THE ATLAS SHIFTER ASSISTANT TOOL</b> .....	1654
<i>A Santos, G Anders, G Avolio, A Kazarov, G Lehmann Miotto, I Soloviev</i>	
<b>ICEPROD 2: A NEXT GENERATION DATA ANALYSIS FRAMEWORK FOR THE ICECUBE NEUTRINO OBSERVATORY</b> .....	1662
<i>D Schultz</i>	
<b>THE ATLAS ARC BACKEND TO HPC</b> .....	1669
<i>S. Haug, M. Hostettler, F. G. Sciacca, M. Weber</i>	
<b>EXPLORING TWO APPROACHES FOR AN END-TO-END SCIENTIFIC ANALYSIS WORKFLOW</b> .....	1676
<i>Scott Dodelson, Steve Kent, Jim Kowalkowski, Marc Paterno, Saba Sehrish</i>	
<b>THE CAREFUL PUPPET MASTER: REDUCING RISK AND FORTIFYING ACCEPTANCE TESTING WITH JENKINS CI</b> .....	1684
<i>Jason A. Smith, Gabriel Richman, John Destefano, James Pryor, Tejas Rao, William Strecker-Kellogg, Tony Wong</i>	
<b>JOBS MASONRY IN LHCb WITH ELASTIC GRID JOBS</b> .....	1692
<i>F Stagni, Ph Charpentier</i>	
<b>PILOTS 2.0: DIRAC PILOTS FOR ALL THE SKIES</b> .....	1697
<i>F Stagni, A Tsaregorodtsev, A McNab, C Luzzi</i>	
<b>THE NOVA SOFTWARE TESTING FRAMEWORK</b> .....	1705
<i>M Tamssett, C Group</i>	
<b>ACHIEVING PRODUCTION-LEVEL USE OF HEP SOFTWARE AT THE ARGONNE LEADERSHIP COMPUTING FACILITY</b> .....	1711
<i>T D Uram, J T Childers, T J Lecompte, M E Papka, D Benjamin</i>	
<b>THE NEW ALICE DQM CLIENT: A WEB ACCESS TO ROOT-BASED OBJECTS</b> .....	1717
<i>B Von Haller, F Carena, W Carena, S Chapeland, V Chibante Barroso, F Costa, C Delort, E Dénes, R. Diviá, U Fuchs, J Niedziela, G Simonetti, C Soós, A Telesca, P Vande Vyvre, A Wegrzynek</i>	
<b>THE ATLAS EVENT SERVICE: A NEW APPROACH TO EVENT PROCESSING</b> .....	1724
<i>P Calafiura, K De, W Guan, T Maeno, P Nilsson, D Oleynik, S Panitkin, V Tsulaia, P Van Gemmeren, T Wenaus</i>	
<b>THE GEANT4 PHYSICS VALIDATION REPOSITORY</b> .....	1731
<i>H Wenzel, J Yarba, A Dotti</i>	
<b>VIRTUAL CIRCUITS IN PHEDEX, AN UPDATE FROM THE ANSE PROJECT</b> .....	1739
<i>V Lápádátescu, T Wildish</i>	
<b>MULTI-VO SUPPORT IN IHEP'S DISTRIBUTED COMPUTING ENVIRONMENT</b> .....	1746
<i>T Yan, B Suo, X H Zhao, X M Zhang, Z T Ma, X F Yan, T Lin, Z Y Deng, W D Li, S Belov, I Pelevanyuk, A Zhemchugov, H Cai</i>	

## **OFFLINE SOFTWARE**

<b>ALFA: THE NEW ALICE-FAIR SOFTWARE FRAMEWORK</b> .....	1752
<i>M. Al-Turany, P. Buncic, P. Hristov, T. Kollegger, C. Kouzinopoulos, A. Lebedev, V. Lindenstruth, A. Manafov, M. Richter, A. Rybalchenko, P. Vande Vyvre, N. Winckler</i>	
<b>THE NOVA SIMULATION CHAIN</b> .....	1757
<i>A Aurisano, C Backhouse, R Hatcher, N Mayer, J Musser, R Patterson, R Schroeter, A Sousa</i>	
<b>BAYESIAN ANALYSIS TOOLKIT: 1.0 AND BEYOND</b> .....	1765
<i>Frederik Beaujean, Allen Caldwell, D. Greenwald, S. Kluth, Kevin Kröninger, O. Schulz</i>	
<b>HISTFITTER: A FLEXIBLE FRAMEWORK FOR STATISTICAL DATA ANALYSIS</b> .....	1771
<i>G J Besjes, M Baak, D Côté, A Koutsman, J M Lorenz, D Short</i>	

<b>ATLAS TRACKING DETECTOR UPGRADE STUDIES USING THE FAST SIMULATION ENGINE</b> .....	1779
<i>Noemi Calace, Andreas Salzburger</i>	
<b>THE GEANTV PROJECT: PREPARING THE FUTURE OF SIMULATION</b> .....	1784
<i>G Amadio, J Apostolakis, M Bandieramonte, A Bhattacharyya, C Bianchini, R Brun, Ph Canal, F Carminati, L Duhem, D Elvira, J De Fine Licht, A Gheata, R L Ilope, G Lima, A Mohanty, T Nikitina, M Novak, W Pokorski, R Seghal, O Shadura, S Vallecorsa, S Wenzel</i>	
<b>A NEW PETABYTE-SCALE DATA DERIVATION FRAMEWORK FOR ATLAS</b> .....	1792
<i>James Catmore, Jack Cranshaw, Thomas Gillam, Eirik Gramstad, Paul Laycock, Nurcan Ozturk, Graeme Andrew Stewart</i>	
<b>KALMAN FILTER TRACKING ON PARALLEL ARCHITECTURES</b> .....	1799
<i>Giuseppe Cerati, Peter Elmer, Steven Lantz, Kevin McDermott, Dan Riley, Matevž Tadel, Peter Wittich, Frank Würthwein, Avi Yagil</i>	
<b>AUTOMATED WORKFLOWS FOR CRITICAL TIME-DEPENDENT CALIBRATIONS AT THE CMS EXPERIMENT</b> .....	1805
<i>G Cerminara, B Van Besien</i>	
<b>SEARCH FOR MATTER-ANTIMATTER ASYMMETRIES IN MULTI-BODY DECAYS WITH GPUS</b> .....	1813
<i>Shanzen Chen, Jolanta Brodzicka, Marco Gersabeck, Chris Parkes, Andrew McNab</i>	

### PART 3

<b>RESEARCH AND DEVELOPMENT OF THE EVOLVING ARCHITECTURE FOR BEYOND THE STANDARD MODEL</b> .....	1821
<i>Kihyeon Cho, Jangho Kim, Junghyun Kim</i>	
<b>USING DD4HEP THROUGH GAUDI FOR NEW EXPERIMENTS AND LHCb</b> .....	1829
<i>M Clemencic, A Karachaliou</i>	
<b>DATA-DRIVEN ESTIMATION OF NEUTRAL PILEUP PARTICLE MULTIPLICITY IN HIGH-LUMINOSITY HADRON COLLIDER ENVIRONMENTS</b> .....	1834
<i>Federico Colechia</i>	
<b>HOW THE MONTE CARLO PRODUCTION OF A WIDE VARIETY OF DIFFERENT SAMPLES IS CENTRALLY HANDLED IN THE LHCb EXPERIMENT</b> .....	1842
<i>G Corti, Ph Charpentier, M Clemencic, J Closier, B Couturier, M Kreps, Z MATHÈ, D O' Hanlon, P Robbe, V Romanovsky, F Stagni, A Zhelezov</i>	
<b>THE HIGGS MACHINE LEARNING CHALLENGE</b> .....	1850
<i>C Adam-Bourdarios, G Cowan, C Germain-Renaud, I Guyon, B Kégl, D Rousseau</i>	
<b>A FLEXIBLE AND MODULAR DATA FORMAT ROOT-BASED IMPLEMENTATION FOR HEP</b> .....	1856
<i>Domenico D'Urso, Matteo Duranti</i>	
<b>DDG4 A SIMULATION FRAMEWORK BASED ON THE DD4HEP DETECTOR DESCRIPTION TOOLKIT</b> .....	1862
<i>M. Frank, F. Gaede, N. Nikiforou, M. Petric, A. Sailer</i>	
<b>MONTE CARLO PRODUCTION MANAGEMENT AT CMS</b> .....	1870
<i>G Boudoul, G Franzoni, A Norkus, A Pol, P Srimanobhas, J-R Vlimant</i>	
<b>ACCELERATING SCIENTIFIC ANALYSIS WITH SCIDB</b> .....	1876
<i>L. Gerhardt, C. H. Faham, Y. Yao</i>	
<b>GEANT4 VMC 3.0</b> .....	1883
<i>J Hrivnácová, A Gheata</i>	
<b>PROGRESS IN GEANT4 ELECTROMAGNETIC PHYSICS MODELLING AND VALIDATION</b> .....	1890
<i>J Apostolakis, M Asai, A Bagulya, J M C Brown, H Burkhardt, N Chikuma, M A Cortes-Giraldo, S Elles, V Grichine, S Guatelli, S Incerti, V N Ivanchenko, J Jacquemier, O Kadri, M Maire, L Pandola, D Sawkey, T Toshito, L Urban, T Yamashita</i>	
<b>CMS FULL SIMULATION FOR RUN-2</b> .....	1898
<i>M Hildreth, V N Ivanchenko, D J Lange, M J Kortelainen</i>	
<b>A VIRTUAL GEANT4 ENVIRONMENT</b> .....	1906
<i>Go Iwai</i>	
<b>THE ATLAS FAST MONTE CARLO PRODUCTION CHAIN PROJECT</b> .....	1913
<i>Roland Jansky</i>	
<b>ALIGNMENT OF THE ATLAS INNER DETECTOR UPGRADED FOR THE LHC RUN II</b> .....	1919
<i>J. Jiménez Peña</i>	
<b>USING THE CMS THREADED FRAMEWORK IN A PRODUCTION ENVIRONMENT</b> .....	1927
<i>C D Jones, L Contreras, P Gartung, D Hufnagel, L Sexton-Kennedy</i>	

<b>4-DIMENSIONAL EVENT BUILDING IN THE FIRST-LEVEL EVENT SELECTION OF THE CBM EXPERIMENT .....</b>	1934
<i>Valentina Akishina, Ivan Kisel</i>	
<b>PROCESSING OF DATA FROM INNOVATIVE PARABOLIC STRIP TELESCOPE.....</b>	1942
<i>Vladislav Kosejk, J Novy, Goce Chadzitaskos</i>	
<b>LISE++ SOFTWARE UPDATES AND FUTURE PLANS.....</b>	1949
<i>Mp Kuchera, Ob Tarasov, D Bazin, B Sherril, Kv Tarasova</i>	
<b>BREAKING THE SILOS: THE ART DOCUMENTATION SUITE .....</b>	1954
<i>Robert K. Kutschke</i>	
<b>DEVELOPMENT OF A NEXT GENERATION CONCURRENT FRAMEWORK FOR THE ATLAS EXPERIMENT .....</b>	1962
<i>P. Calafiura, W. Lampl, C. Leggett, D. Malon, G. Stewart, B. Wynne</i>	
<b>BESIII PHYSICS DATA STORING AND PROCESSING ON HBASE AND MAPREDUCE.....</b>	1969
<i>Xiaofeng Lei, Qiang Li, Bowen Kan, Gongxing Sun, Zhenyu Sun</i>	
<b>ENERGY RECONSTRUCTION IN A HIGHLY GRANULARITY SEMI-DIGITAL HADRONIC CALORIMETER.....</b>	1976
<i>Sameh Mannai, Kais Manai, Eduardo Cortina, Imad Laktineh</i>	
<b>PREPARING ATLAS RECONSTRUCTION SOFTWARE FOR LHC'S RUN 2 .....</b>	1984
<i>Jovan Mitrevski</i>	
<b>EVENT RECONSTRUCTION TECHNIQUES IN NOVA .....</b>	1992
<i>M Baird, J Bian, M Messier, E Niner, D Rocco, K Sachdev</i>	
<b>COSMOSIS: A SYSTEM FOR MC PARAMETER ESTIMATION.....</b>	2000
<i>S Bridle, S Dodelson, E Jennings, J Kowalkowski, A Manzotti, M Paterno, D Rudd, S Sehrish, J Zuntz</i>	
<b>EXPERIMENTAL QUANTIFICATION OF GEANT4 PHYSICSLIST RECOMMENDATIONS: METHODS AND RESULTS .....</b>	2008
<i>Tullio Basaglia, Min Cheol Han, Gabriela Hoff, Chan Hyeong Kim, Sung Hun Kim, Maria Grazia Pia, Paolo Saracco</i>	
<b>A DATA SUMMARY FILE STRUCTURE AND ANALYSIS TOOLS FOR NEUTRINO OSCILLATION ANALYSIS AT THE NOVA EXPERIMENT .....</b>	2016
<i>C. Backhouse, D. Rocco</i>	
<b>THE DATA QUALITY MONITORING SOFTWARE FOR THE CMS EXPERIMENT AT THE LHC .....</b>	2021
<i>M Rovere</i>	
<b>CMS RECONSTRUCTION IMPROVEMENTS FOR THE TRACKING IN LARGE PILEUP EVENTS.....</b>	2029
<i>M Rovere</i>	
<b>ATLAS STRATEGY FOR PRIMARY VERTEX RECONSTRUCTION DURING RUN-2 OF THE LHC .....</b>	2037
<i>G Borisso, D Casper, K Grimm, S Pagan Griso, L Egholm Pedersen, K Prokofiev, M Rudolph, A Wharton</i>	
<b>OPTIMISATION OF THE ATLAS TRACK RECONSTRUCTION SOFTWARE FOR RUN-2 .....</b>	2045
<i>Andreas Salzburger</i>	
<b>EXPLORING JAVASCRIPT AND ROOT TECHNOLOGIES TO CREATE WEB-BASED ATLAS ANALYSIS AND MONITORING TOOLS.....</b>	2053
<i>A Sánchez Pineda</i>	
<b>STATUS AND FUTURE EVOLUTION OF THE ATLAS OFFLINE SOFTWARE.....</b>	2061
<i>R Seuster, M Elsing, G A Stewart, V Tsulaia</i>	
<b>IMPLEMENTATION OF THE ATLAS RUN 2 EVENT DATA MODEL .....</b>	2069
<i>A Buckley, T Eifert, M Elsing, D Gillberg, K Koeneke, A Krasznahorkay, E Moyses, M Nowak, S Snyder, P Van Gemmeren</i>	
<b>CONTINUOUS-READOUT SIMULATION WITH FAIRROOT ON THE EXAMPLE OF THE PANDA EXPERIMENT .....</b>	2077
<i>Tobias Stockmanns</i>	
<b>OPTIMIZATION OF THE LHC TRACK RECONSTRUCTION .....</b>	2083
<i>Barbara Storaci</i>	
<b>GEANT4 SIMULATION FOR A STUDY OF A POSSIBLE USE OF CARBON ION PENCIL BEAMS FOR THE TREATMENT OF OCULAR MELANOMAS WITH THE ACTIVE SCANNING SYSTEM AT CNAO.....</b>	2089
<i>E. Farina, P. Piersimoni, C. Riccardi, A. Rimoldi, A. Tamborini, M. Ciocca</i>	
<b>BACKGROUND ELIMINATION USING THE SNIP ALGORITHM FOR BRAGG REFLECTIONS FROM A PROTEIN CRYSTAL MEASURED BY A TOF SINGLE-CRYSTAL NEUTRON DIFFRACTOMETER.....</b>	2097
<i>K Tomoyori, Y Hirano, K Kurihara, T Tamada</i>	

<b>RUNNING ATLAS WORKLOADS WITHIN MASSIVELY PARALLEL DISTRIBUTED APPLICATIONS USING ATHENA MULTI-PROCESS FRAMEWORK (ATHENAMP)</b> .....	2104
<i>Paolo Calafiura, Charles Leggett, Rolf Seuster, Vakhtang Tsulaia, Peter Van Gemmeren</i>	
<b>ATLAS METADATA INFRASTRUCTURE EVOLUTION FOR RUN 2 AND BEYOND</b> .....	2111
<i>P Van Gemmeren, J Cranshaw, D Malon, A Vaniachine</i>	
<b>MINI-AOD: A NEW ANALYSIS DATA FORMAT FOR CMS</b> .....	2118
<i>G Petrucciani, A Rizzi, C Vuosalo</i>	
<b>SNIPER: AN OFFLINE SOFTWARE FRAMEWORK FOR NON-COLLIDER PHYSICS EXPERIMENTS</b> .....	2124
<i>J. H. Zou, X. T. Huang, W. D. Li, T. Lin, T. Li, K. Zhang, Z. Y. Deng, G. F. Cao</i>	

## ONLINE COMPUTING

<b>ELECTRONS AND PHOTONS AT HIGH LEVEL TRIGGER IN CMS FOR RUN II</b> .....	2129
<i>Afiq A. Anuar</i>	
<b>THE PERFORMANCE OF THE H.E.S.S.TARGET OF OPPORTUNITY ALERT SYSTEM</b> .....	2137
<i>A. Balzer, M. Fießling, P. Hofverberg, R. D. Parsons</i>	
<b>MAD - MONITORING ALICE DATAFLOW</b> .....	2144
<i>V Chibante Barroso, F Costa, C Grigoras, A Wegrzynek</i>	
<b>THE LHCb TURBO STREAM</b> .....	2152
<i>Sean Benson, Vladimir Gligorov, Mika Anton Vesterinen, John Michael Williams</i>	
<b>REAL-TIME FLAVOUR TAGGING SELECTION IN ATLAS</b> .....	2160
<i>Claudia Bertella</i>	
<b>ONLINE TRACKING ALGORITHMS ON GPUS FOR THE PANDA EXPERIMENT AT FAIR</b> .....	2167
<i>L Bianchi, A Herten, J Ritman, T Stockmanns, A. Adinets, J Kraus, D Pleiter</i>	
<b>THE DATA ACQUISITION SYSTEM FOR A KINETIC INDUCTANCE DETECTOR</b> .....	2175
<i>P Branchini, A Budano, L Capasso, D Marchetti</i>	
<b>CMS - HLT CONFIGURATION MANAGEMENT SYSTEM</b> .....	2183
<i>Vincenzo Daponte, Andrea Bocci</i>	
<b>ONLINE DATA HANDLING AND STORAGE AT THE CMS EXPERIMENT</b> .....	2191
<i>J-M Andre, A Andronidis, U Behrens, J Branson, O Chaze, S Cittolin, G-L Darlea, C Deldicque, Z Demiragli, M Dobson, A Dupont, S Erhan, D Gigi, F Glege, G Gómez-Ceballos, J Hegeman, A Holzner, R Jimenez-Estupiñán, L Masetti, F Meijers, E Meschi, Rk Mommsen, S Morovic, C Nuñez-Barranco-Fernández, V O'Dell, L Orsini, C Paus, A Petrucci, M Pieri, A Racz, P Roberts, H Sakulin, C Schwick, B Stieger, K Sumorok, J Veverka, S Zaza, P Zejdl</i>	
<b>REAL-TIME ALIGNMENT AND CALIBRATION OF THE LHCb DETECTOR IN RUN II</b> .....	2199
<i>Giulio Dujany, Barbara Storaci</i>	
<b>THE LHCb DATA ACQUISITION AND HIGH LEVEL TRIGGER PROCESSING ARCHITECTURE</b> .....	2207
<i>M. Frank, C. Gaspar, B. Jost, N. Neufeld</i>	
<b>SWATCH: COMMON CONTROL SW FOR THE UTCA-BASED UPGRADED CMS L1 TRIGGER</b> .....	2215
<i>Jim Brooke, Karol Bunkowski, Ivan Cali, Carlos Ghabrous Larrea, Christos Lazaridis, Alessandro Thea</i>	
<b>OPERATION OF THE UPGRADED ATLAS LEVEL-1 CENTRAL TRIGGER SYSTEM</b> .....	2223
<i>Julian Glatzer</i>	
<b>DATA ACQUISITION FOR THE NEW MUON G-2 EXPERIMENT AT FERMILAB</b> .....	2230
<i>Wesley Gohn</i>	
<b>INTEGRATION OF THE SUPER NOVA EARLY WARNING SYSTEM WITH THE NOVA TRIGGER</b> .....	2238
<i>Alec Habig, Jan Zirnstein</i>	
<b>THE APPLICATION OF DAQ-MIDDLEWARE TO THE J-PARC E16 EXPERIMENT</b> .....	2242
<i>E Hamada, M Ikeno, D Kawama, Y Morino, W Nakai, Y Obara, K Ozawa, H Sendai, T N Takahashi, M M Tanaka, S Yokkaichi</i>	
<b>THE ATLAS TRIGGER CORE CONFIGURATION AND EXECUTION SYSTEM IN LIGHT OF THE ATLAS UPGRADE FOR LHC RUN 2</b> .....	2249
<i>Lukas Heinrich</i>	
<b>THE DATA ACQUISITION SYSTEM OF THE XMASS EXPERIMENT</b> .....	2256
<i>Katsuki Hiraide</i>	
<b>INVESTIGATION OF HIGH-LEVEL SYNTHESIS TOOLS' APPLICABILITY TO DATA ACQUISITION SYSTEMS DESIGN BASED ON THE CMS ECAL DATA CONCENTRATOR CARD EXAMPLE</b> .....	2262
<i>Michal Husejko, John Evans, Jose Carlos Rasteiro Da Silva</i>	



<b>THE NOVA DAQ MONITOR SYSTEM</b> .....	2270
<i>Michael Baird, Deepika Grover, Susan Kasahara, Mark Messier</i>	
<b>ONLINE / OFFLINE RECONSTRUCTION OF TRIGGER-LESS READOUT IN THE R3B EXPERIMENT AT FAIR</b> .....	2276
<i>Dmytro Kresan, Mohammad Al-Turany, Florian Uhlig</i>	
<b>PERFORMANCE EVALUATION OF THE ATLAS IBL CALIBRATION</b> .....	2283
<i>M. Kretz</i>	
<b>THE ALICE HIGH LEVEL TRIGGER: STATUS AND PLANS</b> .....	2289
<i>Mikolaj Krzewicki, David Rohr, Sergey Gorbunov, Timo Breitner, Johannes Lehrbach, Volker Lindenstruth, Dario Berzano</i>	
<b>ATLAS TDAQ SYSTEM ADMINISTRATION: EVOLUTION AND RE-DESIGN</b> .....	2295
<i>S Ballestrero, A Bogdanchikov, F Brasolin, C Contescu, S Dubrov, D Fazio, A Korol, C J Lee, D A Scannicchio, M S Twomey</i>	
<b>LHCB TOPOLOGICAL TRIGGER REOPTIMIZATION</b> .....	2303
<i>Tatiana Likhomanenko, Philip Ilten, Egor Khairullin, Alex Rogozhnikov, Andrey Ustyuzhanin, Michael Williams</i>	
<b>DEAP-3600 DATA ACQUISITION SYSTEM</b> .....	2311
<i>Thomas Lindner</i>	
<b>DEVELOPMENTS AND APPLICATIONS OF DAQ FRAMEWORK DABC V2</b> .....	2319
<i>J Adamczewski-Musch, N Kurz, S Linev</i>	
<b>PYRAME, A RAPID-PROTOTYPING FRAMEWORK FOR ONLINE SYSTEMS</b> .....	2327
<i>Frédéric Magniette, Miguel Rubio-Roy, Floris Thiant</i>	
<b>PERFORMANCE AND DEVELOPMENT PLANS FOR THE INNER DETECTOR TRIGGER ALGORITHMS AT ATLAS</b> .....	2335
<i>Stewart Martin-Haugh</i>	
<b>THE DATABASE DRIVEN ATLAS TRIGGER CONFIGURATION SYSTEM</b> .....	2340
<i>Carlos Chavez, Michele Gianelli, Alex Martyniuk, Joerg Stelzer, Mark Stockton, Will Vazquez</i>	
<b>SOFTWARE FOR IMPLEMENTING TRIGGER ALGORITHMS ON THE UPGRADED CMS GLOBAL TRIGGER SYSTEM</b> .....	2348
<i>Takashi Matsushita, Bernhard Arnold</i>	
<b>THE DAQ NEEDLE IN THE BIG-DATA HAYSTACK</b> .....	2353
<i>E Meschi</i>	
<b>FILE-BASED DATA FLOW IN THE CMS FILTER FARM</b> .....	2361
<i>J-M Andre, A Andronidis, T Bawej, U Behrens, J Branson, O Chaze, S Cittolin, G-L Darlea, C Deldicque, M Dobson, A Dupont, S Erhan, D Gigi, F Glege, G Gomez-Ceballos, J Hegeman, A Holzner, R Jimenez-Estupiñán, L Masetti, F Meijers, E Meschi, R K Mommsen, S Morovic, C Nunez-Barranco-Fernandez, V O'Dell, L Orsini, C Paus, A Petrucci, M Pieri, A Racz, P Roberts, H Sakulin, C Schwick, B Stieger, K Sumorok, J Veverka, S Zaza, P Zejdl</i>	
<b>IMPLEMENTATION OF AN UPWARD-GOING MUON TRIGGER FOR INDIRECT DARK MATTER SEARCHES AT THE NOVA FAR DETECTOR</b> .....	2369
<i>R. Mina, M. J. Frank, E. Fries, R. C. Group, A. Norman, I. Oksuzian</i>	
<b>A NEW EVENT BUILDER FOR CMS RUN II</b> .....	2376
<i>K Albertsson, J-M Andre, A Andronidis, U Behrens, J Branson, O Chaze, S Cittolin, G-L Darlea, C Deldicque, M Dobson, A Dupont, S Erhan, D Gigi, F Glege, G Gomez-Ceballos, J Hegeman, A Holzner, R Jimenez-Estupiñán, L Masetti, F Meijers, E Meschi, R K Mommsen, S Morovic, C Nunez-Barranco-Fernandez, V. O'Dell, L Orsini, C Paus, A Petrucci, M Pieri, A Racz, P Roberts, H Sakulin, C Schwick, B Stieger, K Sumorok, J Veverka, S Zaza, P Zejdl</i>	
<b>A SCALABLE MONITORING FOR THE CMS FILTER FARM BASED ON ELASTICSEARCH</b> .....	2384
<i>J-M Andre, A Andronidis, U Behrens, J Branson, O Chaze, S Cittolin, G-L Darlea, C Deldicque, M Dobson, A Dupont, S Erhan, D Gigi, F Glege, G Gomez-Ceballos, J Hegeman, A Holzner, R Jimenez-Estupiñán, L Masetti, F Meijers, E Meschi, R K Mommsen, S Morovic, C Nunez-Barranco-Fernandez, V. O'Dell, L Orsini, C Paus, A Petrucci, M Pieri, A Racz, P Roberts, H Sakulin, C Schwick, B Stieger, K Sumorok, J Veverka, S Zaza, P Zejdl</i>	
<b>THE ATLAS TRIGGER SYSTEM: READY FOR RUN-2</b> .....	2392
<i>Yu Nakahama</i>	
<b>FUTURE OF DAQ FRAMEWORKS AND APPROACHES, AND THEIR EVOLUTION TOWARDS THE INTERNET OF THINGS</b> .....	2398
<i>Niko Neufeld</i>	
<b>GENERIC OPC UA SERVER FRAMEWORK</b> .....	2407
<i>Piotr P Nikiel, Benjamin Farnham, Viatcheslav Filimonov, Stefan Schlenker</i>	
<b>TIMING IN THE NOVA DETECTORS WITH ATOMIC CLOCK BASED TIME TRANSFERS BETWEEN FERMILAB, THE SOUDAN MINE AND THE NOVA FAR DETECTOR</b> .....	2415
<i>A. Norman, E. Niner, A. Habig</i>	

<b>PERFORMANCE OF THE NO?A DATA ACQUISITION AND TRIGGER SYSTEMS FOR THE FULL 14 KT FAR DETECTOR .....</b>	<b>2423</b>
<i>A. Norman, G. S. Davies, P. F. Ding, E. C. Dukes, H. Duyan, M. J. Frank, R. C. Group, A. Habig, W. Henderson, E. Niner, R. Mina, A. Moren, L. Mualem, Y. Oksuzian, B. Rebel, P. Shanahan, A. Sheshukov, M. Tamsett, K. Tomsen, L. Vinton, Z. Wang, B. Zamorano, J. Zirnstien</i>	
<b>PILOT RUN OF THE NEW DAQ OF THE COMPASS EXPERIMENT .....</b>	<b>2432</b>
<i>J Novy, M Bodlak, V Jary, I Konorov, M Virius, D Steffen, J Tomsa, A Kveton, D Levit, S Huber, V Frolov</i>	
<b>DEVELOPMENT OF GEM TRIGGER ELECTRONICS FOR THE J-PARC E16 EXPERIMENT .....</b>	<b>2440</b>
<i>Y. Obara, E. Hamada, M. Ikeno, D. Kawama, Y. Morino, W. Nakai, K. Ozawa, H. Sendai, T. N. Takahashi, M. M. Tanaka, T. Uchida, S. Yokkaichi</i>	
<b>PERFORMANCE OF THE CMS HIGH LEVEL TRIGGER .....</b>	<b>2445</b>
<i>Andrea Perrotta</i>	
<b>CMS HIGH LEVEL TRIGGER TIMING MEASUREMENTS .....</b>	<b>2453</b>
<i>Clint Richardson</i>	
<b>A DESIGN STUDY FOR THE UPGRADED ALICE O2 COMPUTING FACILITY .....</b>	<b>2460</b>
<i>Matthias Richter</i>	
<b>FAST TPC ONLINE TRACKING ON GPUS AND ASYNCHRONOUS DATA PROCESSING IN THE ALICE HLT TO FACILITATE ONLINE CALIBRATION.....</b>	<b>2468</b>
<i>David Rohr, Sergey Gorbunov, Mikolaj Krzewicki, Timo Breitner, Matthias Kretz, Volker Lindenstruth</i>	
<b>EFFICIENT TIME FRAME BUILDING FOR ONLINE DATA RECONSTRUCTION IN ALICE EXPERIMENT .....</b>	<b>2476</b>
<i>A. Rybalchenko, M. Al-Turany, C. Kouzinopoulos, N. Winckler</i>	
<b>HIGH SPEED FAULT TOLERANT SECURE COMMUNICATION FOR MUON CHAMBER USING FPGA BASED GBTX EMULATOR .....</b>	<b>2484</b>
<i>Suman Sau, Swagata Mandal, Jogender Saini, Amlan Chakrabarti, Subhasis Chattopadhyay</i>	
<b>FELIX: A HIGH-THROUGHPUT NETWORK APPROACH FOR INTERFACING TO FRONT END ELECTRONICS FOR ATLAS UPGRADES.....</b>	<b>2492</b>
<i>J Anderson, A Borga, H Boterenbrood, H Chen, K Chen, G Drake, D Francis, B Gorini, F Lanni, G Lehmann Miotto, L Levinson, J Narevicius, C Plessl, A Roich, S Ryu, F Schreuder, J Schumacher, W Vandelli, J Vermeulen, J Zhang</i>	
<b>THE ATLAS JET TRIGGER PERFORMANCE IN LHC RUN I AND RUN II UPDATES .....</b>	<b>2500</b>
<i>Shima Shimizu</i>	
<b>UPGRADE OF THE ATLAS LEVEL-1 TRIGGER WITH EVENT TOPOLOGY INFORMATION .....</b>	<b>2505</b>
<i>E. Simioni, S. Artz, B. Bauß, V. Büscher, K. Jakobi, A. Kaluza, C. Kahra, M. Palka, A. Reiß, J. Schäffer, U. Schäfer, A. Schulte, M. Simon, S. Tapprogge, A. Vogel, M. Zinser</i>	
<b>THE ELECTRONICS, ONLINE TRIGGER SYSTEM AND DATA ACQUISITION SYSTEM OF THE J-PARC E16 EXPERIMENT .....</b>	<b>2513</b>
<i>T N Takahashi, E Hamada, M Ikeno, D Kawama, Y Morino, W Nakai, Y Obara, K Ozawa, H Sendai, M M Tanaka, T Uchida, S Yokkaichi</i>	
<b>MONITORING TOOLS OF COMPASS EXPERIMENT AT CERN .....</b>	<b>2520</b>
<i>M Bodlak, V Frolov, S Huber, V Jary, I Konorov, D Levit, J Novy, R Salac, J Tomsa, M Virius</i>	
<b>PERFORMANCE OF TRACKING, B-TAGGING AND JET/MET RECONSTRUCTION AT THE CMS HIGH LEVEL TRIGGER .....</b>	<b>2527</b>
<i>Mia Tosi</i>	
<b>DEVELOPMENT AND TEST OF THE DAQ SYSTEM FOR A MICROMEGAS PROTOTYPE TO BE INSTALLED IN THE ATLAS EXPERIMENT .....</b>	<b>2535</b>
<i>M. Bianco, S. Martoiu, O. Sidiropoulou, A. Zibell</i>	
 <b><u>PERFORMANCE INCREASE AND OPTIMIZATION EXPLOITING HARDWARE FEATURES</u></b>	
<b>ONLINE-ANALYSIS OF HITS IN THE BELLE-II PIXELDETECTOR FOR SEPARATION OF SLOW PIONS FROM BACKGROUND .....</b>	<b>2542</b>
<i>S Baehr, O Sander, M Heck, C Pulvermacher, M Feindt, J Becker</i>	
<b>A MULTI-PORT 10GBE PCIE NIC FEATURING UDP OFFLOAD AND GPUDIRECT CAPABILITIES.....</b>	<b>2550</b>
<i>Roberto Ammendola, Andrea Biagioni, Ottorino Frezza, Gianluca Lamanna, Francesca Lo Cicero, Alessandro Lonardo, Michele Martinelli, Pier Stanislao Paolucci, Elena Pastorelli, Luca Pontisso, Davide Rossetti, Francesco Simula, Marco Sozzi, Laura Tosoratto, Piero Vicini</i>	
<b>LARGE-SCALE MERGING OF HISTOGRAMS USING DISTRIBUTED IN-MEMORY COMPUTING.....</b>	<b>2558</b>
<i>Jakob Blomer, Gerardo Ganis</i>	

<b>SIMD STUDIES IN THE LHC B RECONSTRUCTION SOFTWARE .....</b>	<b>2564</b>
<i>Daniel Hugo Cámpora Pérez, Ben Couturier</i>	
<b>CLUSTERALIVE.....</b>	<b>2571</b>
<i>G. Caruso, S. Arezzini, A. Ciampa, A. Formoso, E. Mazzoni</i>	
<b>SIMULATION OF LHC EVENTS ON A MILLIONS THREADS .....</b>	<b>2578</b>
<i>J T Childers, T D Uram, T J Lecompte, M E Papka, D P Benjamin</i>	
<b>FUTURE COMPUTING PLATFORMS FOR SCIENCE IN A POWER CONSTRAINED ERA .....</b>	<b>2584</b>
<i>David Abdurachmanov, Peter Elmer, Giulio Eulisse, Robert Knight</i>	
<b>HIGH PERFORMANCE DATA ANALYSIS VIA COORDINATED CACHES .....</b>	<b>2592</b>
<i>M Fischer, C Metzlauff, E Kühn, M Giffels, G Quast, C Jung, T Hauth</i>	
<b>MATRIX ELEMENT METHOD FOR HIGH PERFORMANCE COMPUTING PLATFORMS.....</b>	<b>2600</b>
<i>G Grasseau, D Chamont, F Beaudette, L Bianchini, O Davignon, L Mastrolorenzo, C Ochando, P Paganini, T Strebler</i>	
<b>THE EFFECT OF NUMA TUNINGS ON CPU PERFORMANCE .....</b>	<b>2607</b>
<i>Christopher Hollowell, Costin Caramarcu, William Strecker-Kellogg, Antonio Wong, Alexandr Zaytsev</i>	
<b>ATLAS COMPUTING ON CSCS HPC .....</b>	<b>2614</b>
<i>A. Filipicic, S. Haug, M. Hostettler, R. Walker, M. Weber</i>	
<b>HPC IN A HEP LAB: LESSONS LEARNED FROM SETTING UP COST-EFFECTIVE HPC CLUSTERS .....</b>	<b>2620</b>
<i>Michal Husejko, Ioannis Agtzidis, Pierre Baehler, Tadeusz Dul, John Evans, Nils Himyr, Helge Meinhard</i>	
<b>FIRST EXPERIENCE OF VECTORIZING ELECTROMAGNETIC PHYSICS MODELS FOR DETECTOR SIMULATION .....</b>	<b>2628</b>
<i>G Amadio, J Apostolakis, M Bandieramonte, C Bianchini, G Bitzes, R Brun, P Canal, F Carminati, J De Fine Licht, L Duhem, D Elvira, A Gheata, S Y Jun, G Lima, M Novak, M Presbyterian, O Shadura, R Seghal, S Wenzel</i>	
<b>TRIGGERING EVENTS WITH GPUS AT ATLAS.....</b>	<b>2634</b>
<i>S Kama, J Augusto Soares, J Baines, M Bauce, T Bold, P Conde Muino, D Emel'yanov, R Goncalo, A Messina, M Negrini, L Rinaldi, A Sidoti, A Tavares Delgado, S Tupputi, L Vaz Gil Lopes</i>	
<b>A NEW SELF-ADAPTIVE DISPATCHING SYSTEM FOR LOCAL CLUSTERS.....</b>	<b>2642</b>
<i>Bowen Kan, Jingyan Shi, Xiaofeng Lei</i>	
<b>PERFORMANCE OF THE ATLAS MUON TRIGGER IN RUN I AND UPGRADES FOR RUN II.....</b>	<b>2649</b>
<i>Dai Kobayashi</i>	
<b>HARDWARE AND SOFTWARE DESIGN OF FPGA-BASED PCIE GEN3 INTERFACE FOR APENET+ NETWORK INTERCONNECT SYSTEM .....</b>	<b>2655</b>
<i>R. Ammendola, A. Biagioni, O. Frezza, F. Lo Cicero, A. Lonardo, M. Martinelli, P. S. Paolucci, E. Pastorelli, D. Rossetti, F. Simula, L. Tosoratto, P. Vicini</i>	
<b>INTEGRATION OF RUSSIAN TIER-1 GRID CENTER WITH HIGH PERFORMANCE COMPUTERS AT NRC-KI FOR LHC EXPERIMENTS AND BEYOND HENP.....</b>	<b>2663</b>
<i>A Belyaev, A Berezhnaya, L Betev, P Buncic, K De, D Drizhuk, A Klimentov, Y Lazin, I Lyalin, R Mashinistov, A Novikov, D Oleynik, A Polyakov, A Poyda, E Ryabinkin, A Teslyuk, I Tkachenko, L Yasnopolskiy</i>	
<b>BRINGING ATLAS PRODUCTION TO HPC RESOURCES - A USE CASE WITH THE HYDRA SUPERCOMPUTER OF THE MAX PLANCK SOCIETY .....</b>	<b>2671</b>
<i>J A Kennedy, S Kluth, L Mazzaferro, Rodney Walker</i>	
<b>INTEGRATION OF PANDA WORKLOAD MANAGEMENT SYSTEM WITH TITAN SUPERCOMPUTER AT OLCF .....</b>	<b>2679</b>
<i>K. De, A. Klimentov, D. Oleynik, S. Panitkin, A. Petrosyan, J. Schovancova, A. Vaniachine, T. Wenaus</i>	
<b>EVALUATING THE TRANSPORT LAYER OF THE ALFA FRAMEWORK FOR THE INTEL® XEON PHI™ COPROCESSOR .....</b>	<b>2687</b>
<i>Aram Santogidis, Andreas Hirstius, Spyros Lalis</i>	
<b>PERFORMANCE BENCHMARK OF LHC B CODE ON STATE-OF-THE-ART X86 ARCHITECTURES .....</b>	<b>2695</b>
<i>D H Campora Perez, N Neufeld, R Schwemmer</i>	
<b>EVALUATION OF 'OPENCL FOR FPGA' FOR DATA ACQUISITION AND ACCELERATION IN HIGH ENERGY PHYSICS.....</b>	<b>2703</b>
<i>Srikanth Sridharan</i>	
<b>EVALUATING THE POWER EFFICIENCY AND PERFORMANCE OF MULTI-CORE PLATFORMS USING HEP WORKLOADS .....</b>	<b>2711</b>
<i>P Szostek, V Innocente</i>	
<b>FINE GRAINED EVENT PROCESSING ON HPCS WITH THE ATLAS YODA SYSTEM.....</b>	<b>2719</b>
<i>Paolo Calafiura, Kaushik De, Wen Guan, Tadashi Maeno, Paul Nilsson, Danila Oleynik, Sergey Panitkin, Vakhtang Tsulaia, Peter Van Gemmeren, Torre Wenaus</i>	
<b>ACCELERATION OF ENSEMBLE MACHINE LEARNING METHODS USING MANY-CORE DEVICES .....</b>	<b>2724</b>
<i>A. Tamerus, A. Washbrook, D. Wyeth</i>	