

32nd IAA Symposium on Small Satellite Missions

Held at the 76th International Astronautical Congress
(IAC 2025)

Sydney, Australia
29 September - 3 October 2025

Volume 1 of 2

ISBN: 979-8-3313-2932-7
DOI: <https://doi.org/10.52202/083084>

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© (2025) by International Astronautical Federation
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

For permission requests, please contact International Astronautical Federation
at the address below.

International Astronautical Federation
100 Avenue de Suffren
75015 Paris
France

Phone: +33 1 45 67 42 60
Fax: +33 1 42 73 21 20

www.iafastro.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

B4.1 26TH WORKSHOP ON SMALL SATELLITE PROGRAMMES AT THE SERVICE OF DEVELOPING COUNTRIES

Effort on the Sustainable Space Program for the Dissemination of Space Technology	1
<i>Tetsuhito Fuse</i>	
Exploring Many-Core Processors for Onboard Image Processing in Nanosatellites: A Proposal	5
<i>Avid Roman-Gonzalez, Natalia Indira Vargas-Cuentas</i>	
Filling the Environmental Knowledge Gaps Above the Tropics with CubeSats/MicroSats: How the “Equatorial Sentinels” Concept Might Disrupt the Traditional North-South Cooperation Paradigm	9
<i>Erick Lansard, Michael Higgins, Aurelie Guerineau, Yee Hui Lee, Wee Seng Lim, William Blackwell, Charles Elachi</i>	
Ghana’s First Locally Designed PocketQube: Xavsat-1.....	16
<i>Solomon Appekey, Jemimah Kwakuyi, Daniel Asante, Lazar Jeftic, Kwame Amoako, Jake Kwaayisi Yawson, Musa Sanoh Kamara, Linus Labik</i>	
Hands-On Satellite Training Program for Future Space Engineers: The SkyTech Project.....	26
<i>Raihana Shams Islam Antara, Hanadi Abdalla, Eliza Sapkota, Yukihiisa Otani, Rodrigo Cordova, Eyoas Areda, Victor Schulz, Abdulla Hil Kafi, Mujuni Edgar, Sirash Sayanju, Merisa Kosiyakul, Necmi Cihan Orger, Tetsuhito Fuse</i>	
Industry Capacity Building Planning for Thailand’s Satellite Program.....	34
<i>Atipat Wattanuntachai, Tananiti Promwongsa, Panachai Santananukarn, Napatrsorn Suksin</i>	
Opportunities for CubeSat-related Capacity-Building under the United Nations Access to Space for All initiative: Achievements in 2024-2025.....	40
<i>Mami Sasamura, Jorge Del Rio Vera, Lorant Czarán</i>	

B4.2 SMALL SPACE SCIENCE MISSIONS

The Deep Space Radiation Probe: Development and First Results from a First Lunar Science Payload for Space Environment Studies and Capacity Building.....	46
<i>Loren Chang, Yi-Hsuan Chou, Chieh Lung, Shih-Pin Lee, Tzu-Wei Hung, I Chen, Yu-Hsiu Tien, Yi-Chung Chiu, Jann-Yenq Liu, Tung-Yuan Hsiao</i>	
Assembly, Integration, and Testing of Aspera: A Next Generation Microsatellite Astrophysics Mission.....	53
<i>Alexander Leaf, Benjamin Nero, Sean Tedesco, Suraj Sridharan, Simon Grocott, Robert Zee, Haeun Chung, Nicole Melso, Carlos Vargas</i>	
The SpIRIT Mission: Novel Space Telescope Technology	64
<i>Michele Trenti, Simon Barraclough, Miguel Del Castillo, Robert Mearns, Fabrizio Fiore, Yuri Evangelista, Riccardo Campana, Sarah Caddy, Airlie Chapman</i>	

Mission Concept for the Study of Cislunar Space Weather and Lunar Occultations from Stable Earth-Moon L4 Orbits	69
<i>Franco Criscola, Luis Mendoza Zambrano, Angels Aran, Stephen Eikenberry, Octavi Fors, Jose Maria Gomez, Riccardo Bevilacqua, Ariadna Farres, David Canales</i>	
Neuromorphic Vision Sensor Noise Characterization and Detection for CubeSat Technology Demonstration Mission	84
<i>Lara Schuberth, Sydney Dolan, Alessandro Golkar</i>	
CubeSat Mission Design to Measure Localized Magnetic Fields on Martian Surface Utilizing Artificial Intelligence and Atmosphere Breathing Electric Propulsion	97
<i>Jessica Sillus, Ian Harris, John M. Horack, Annabelle Zerby, Stephanie Small, Svitlana Pryymachuk, Max Heil</i>	
Construction of a Numerical Optical Simulator of a Formation Flying Infrared Space Interferometer and Evaluation of Observable Condition	109
<i>Takumi Ogawa, Masaki Ito, Kuna Shitara, Hirotaka Kondo, Satoshi Ikari, Taro Matsuo, Ryu Funase, Shinichi Nakasuka</i>	
Development the Spacecraft System of VERTECS: Observing Extragalactic Background Light in the Near-Infrared	120
<i>Ryo Hashimoto, Kei Sano, Takao Nakagawa</i>	

B4.3 SMALL SATELLITE OPERATIONS

Proba-3: Operating a Dual Satellites Mission for Autonomous Precision Formation-Flying.....	131
<i>Domenico Scopelliti, Marie Karel Beeckman, Jens Jochems, Stijn Ilsen, Sergio Tiraplegui Riveras, Daniel Serrano, Víctor Gómez Ruiz, Rene Wittmann, Marcus De Deus Silva, Damien Galano, Jorg Versluys, Raphael Rougeot, Teodor Bozhanov, Esther Bastida Pertegaz, Laurent Waseige, Pierre Denis, Juan José Negrete Solana, Serban Anghel, Juan Pablo Ramos</i>	
A Concept for Spectrum Sharing Through Scheduling and Collaborative Planning.....	138
<i>Martin Von Der Ohe, Balthasar Indermuehle, Thomas Telkamp</i>	
Safety Concept of Proximity Operations in Low Earth Orbit: The SpEye CubeSat Mission.....	147
<i>Giacomo Borelli, Gabriella Vittoria Maria Gaias, Camilla Colombo, Vincenzo Capuano, Daniele Urban, Vincenzo Pulcino</i>	
Demonstration of an Automated Operation Planning System for ONGLAISAT CubeSat	155
<i>Riki Nakamura, Shunichiro Nomura, Akihiro Ishikawa, Satoshi Ikari, Ryu Funase, Shinichi Nakasuka</i>	
Development of an Automated Tool for Executing Safe Orbit Adjustment Campaigns for Formation Flying Satellites	165
<i>Saksham Jain, Niels Roth, Bryan Johnston-Lemke, Robert Zee</i>	
Flight Formation Strategy and Execution for 3GPP Rel-17 5G NB-IoT NTN Using CubeSats in the Sateliot Constellation.....	179
<i>Didac Cabús, Josep Molins Farrés, Guillem Duarri, Giacomo Velo, Maria De Quadras Gambús, Ramon Ferrús</i>	
Camera Viewpoints Optimization for Fully Imaging a Resident Space Object.....	186
<i>Moshe Landon</i>	

Analysis and Validation of Gas-Surface Interaction Models for VLEO Spacecraft Using ADBSat Framework.....	195
<i>Tahir Çebi, Ahmet Selim Durna</i>	

In-Orbit Results and Lessons Learned from the 6U+ CubeSat Mission SONATE-2	207
<i>Andreas Maurer, Oleksii Balagurin, Tobias Herbst, Hakan Kayal, Jonathan Männel, Tobias Neumann, Clemens Riegler, Tobias Schwarz, Joshua Stadler</i>	

B4.4 SMALL EARTH OBSERVATION MISSIONS

Proposal for a CubeSat Mission to Study the Influence of Earthquakes on Energetic Particle Precipitation in South America.....	222
<i>Peter Perez, Mauricio Rejas Morales, Nil Andy Armillon Huaman</i>	

Feasibility Study of VLEO Smallsat Platform based on On-Orbit Achievements of Super Low Altitude Test Satellite (SLATS)	231
<i>Tomotaka Yamamoto, Kazuya Konoue, Shunsuke Imamura, Asami Hayato, Takashi Ohtani</i>	

AquaWatch: Australia-United Kingdom – a Bilateral Small Satellite Project for Cost Effective Water Quality Monitoring	240
<i>Stephanie Mottershead, Simon Meik, Alex Held, Nick Carter, Craig Ingram, Joshua Pease, Martin Sweeting, Sander Voss, Andrew Barton, Geraldine Baca Triveno</i>	

Hardware Design and Testing of the UAE GNSS-R Payload (SEASTAR).....	248
<i>Yasir Abbas, Shah Zahid Khan, Edwar Edwar, Muhammed Kallumottakkal, Abdulhalim Jallad, Adriano Camps</i>	

Flight Model Design and Development of the W6U-Size PRELUDE for Investigating Ionospheric Earthquake Precursor Phenomena	252
<i>Nagisa Sone, Masahiko Yamazaki, Masashi Kamogawa</i>	

Ground Motion Compensation Demonstration and Assessment – Kanyini CubeSat In-Orbit Results	264
<i>Robin Georg, Zebb Prime, Carl Seubert, Andrew Barton, Nick Manser, Hugh Prescott</i>	

Towards Very-High Resolution Earth Observation from VLEO with Small Satellites	278
<i>Daniel Garbe, Stephan Busch, Noah Ledford</i>	

Galassia 5 - Development of a 6U Edge AI Earth Observation Satellite with Direct to User Downlink Capability	287
<i>Tristan Voon, Wei Han Eugene Ee, Grace Ng, Victor Soh, Wen Jun Lee, David Michael Woodside, Aakash Jayadeep</i>	

Detection of Seismo-Electromagnetic Waves using Non-Boom Quad-Mag Technology on Nepal's 1U Slippers2Sat CubeSat	300
<i>Prem Bahadur Rana, Sangam Thapa, Rishav Adhikari, Sajan Duwal, Anjali Dhami, Kriti Dahal, Trishna Shrestha, Abhas Maskey</i>	

SENSORIS: Using Consumer Electronics to Revolutionize Earth Observation Missions.....	315
<i>Tim Gust, Antonio Garcia, Alexander Koch, Benny Rievers, Matthias Weigelt, Joshua Reeder, Johann Max Rohr, Sören Peik</i>	

KonSat-1: Multisensor System for Detecting Oil Pollution from Ships Using Optical and AIS Technologies.....	321
<i>Juan Salvador Palacios Bett, Jose Luis Segundo Manayay, Raúl Gianmarco Chávez Chávez, Alejandro José Agapito Quiñones, Luis Angel Vilcamiche Fernandez, Fidel Castro Suazo, Giuliano Sanchez-Butron, Julio César Casquero Zaidman</i>	

HORUS: A High-Resolution Earth Observation Mission in Very Low Earth Orbit.....	332
<i>Lorenzo Cesarini, Francesco Cataffo, Matteo Dowell, Beatrice Beretta, Giacomo Biraghi, Matteo Giovanni Juvara, Matteo Braga, Andrea Jimmy Pacursa, Manuel Cappuccio, Davide Bellini, Michèle Lavagna</i>	

Payload Design with OnBoard Artificial Vision Capabilities for a 1U CubeSat Using COTS Cameras	348
<i>Misael Landero, Jaime Pineda, Walter G. A. E. Cifuentes, Ana Carolina Thompson Gálvez, Christian Andres Acajabon Rivera</i>	

B4.5 ACCESS TO SPACE FOR SMALL SATELLITE MISSIONS

Utilizing Small Satellite Launch Vehicle - A Cross-Border Collaboration for Space Mission Australia India Technology Research and Innovation (Space MAITRI) by Space Machines Company and New Space India Limited	355
<i>Nhat Nguyen, Sai Prasanna Gautam Aleti</i>	

Enabling On-Demand Launches and Reentries	362
<i>Zheng Tao</i>	

Very Low Earth Orbit Nanosatellite Platform with Innovative, Resource-Saving Orbit Keeping Strategy.....	375
<i>Georg Langer, Valentin Petzold, Max Trenkner, Carl Ulrich Brinker, Martin Tajmar, Tino Schmiel</i>	

Low Cost Cluster Self Reconfigurable Modular Spacecraft for Multimodal Space and Ground Observation Missions	381
<i>Tongshu Zhang, Suyi Liu, Xuyang Cao, Xin Ning, Xiaobin Lian</i>	

Lesson Learned from Tracking & Identification for Rideshare LEOP Support.....	390
<i>Robert Arthur, Gianmario Merisio, Miguel Santos, André Ribeiro, Chiara Manfletti</i>	

Constellation Reconfiguration and Task Scheduling Optimization for Emergency Earth Observation Response Using Low-Thrust	401
<i>Zhengqing Fang, Zhaokui Wang, Roberto Armellin</i>	

Ballistic Coefficient Characterization of the 3U CubeSat IGNIS Mission.....	410
<i>Riccardo Guida, Corrado D'Urso</i>	

Development and Flight of a Suborbital Payload for Reentry Power Generation and Bacterial Exo-ionospheric Irradiation Experiments.....	419
<i>Maria Chytka, Cailin Bain, Anthony Shipp, Samuel Arnold, Michael Angeles, Tanner Land, Miranda Van Rensselaer, Amy Lebleu-Debartola, Andrew Jordan, Triston Tindell, Jackson Lee, Gregory Calhoun, Harrison Slusser, Keller Powell, Joshua Franklin, Lucas Thelen, Ben Campbell, James Roberson</i>	

Orbital Docking and Integration Nexus (ODIN): A Scalable and Sustainable In-Orbit Platform for Space Research.....	435
<i>Oliver Legon, Sedat Izcan, Luis Cormier, Nishanth Pushparaj, Chantal Cappelletti</i>	

B4.6A GENERIC TECHNOLOGIES FOR SMALL SATELLITES (1)

Advances in Space-Based Beidou/GNSS Remote Sensing Technology and Its Small Satellite Applications in China.....	449
<i>Yueqiang Sun, Congliang Liu, Qifei Du, Xianyi Wang, Weihua Bai, Xiangguang Meng, Feixiong Huang, Jiahui Liang</i>	
JamSail: A 3U CubeSat for GNSS Interference Mapping, Ionospheric Scintillation Analysis, and ADCS Research.....	458
<i>Tasneem Yousif, Luis Cormier, Jason Richards, Samuel Thompson, Leandro Reis</i>	
Flight Demonstration of an Electro-Permanent Magnetorquer for Energy-Efficient Small Satellite Attitude Control.....	472
<i>Anne Bettens, Xueliang Bai, Patrick Oppel, Xiaofeng Wu, Zihao Wang, Iver Cairns, Youngho Eun</i>	
Evaluation and Mitigation of Reaction Wheel Disturbances in a Micro-Satellite Formation Flying Infrared Interferometer Mission	479
<i>Kuna Shitara, Takumi Ogawa, Tomoki Mochizuki, Masaki Ito, Satoshi Ikari, Taro Matsuo, Hirotaka Kondo, Ryu Funase, Shinichi Nakasuka</i>	
Preliminary Design and Testing of Multi-Sensor Relative Navigation Architectures for the SpEye CubeSat Mission.....	488
<i>Roberto Opromolla, Matteo Palescandolo, Giuseppe Napolano, Claudio Vela, Alessia Nocerino, Giancarmine Fasano, Michele Grassi, Vincenzo Capuano, Daniele Urban, Vincenzo Pulcino</i>	
Utilising SpaceChipExplorer to Benchmark Data Reduction Performance on FPGAs in Space	497
<i>Ric Dengel, Mihkel Pajusalu, Rene Laufer</i>	
Continuous Low-Thrust Maneuver Detection of Mega Constellation Satellites Based on Conditional Diffusion Model.....	508
<i>Kun Zhang, Yun Xu, Xiaoxuan Hu</i>	
Multi-Agent Deep Reinforcement Learning for Cooperative Control of Small Satellite Formations Under Complex Constraints	519
<i>Yingkai Cai, Zhaokui Wang</i>	
Magnethruster: A Propulsion System for Satellites Based on Lorentz Force	530
<i>Riccardo Nicoletti, Stefano Carletta, Francesco Margani, Luca Armani, Filippo Graziani, Efraim Brandolini, Giacomo Sparvieri, Lia Carbone</i>	
Enhancing Small Earth Observation Satellites with Space Grade Commercial-Off-The-Shelf (SCOTS) Telescope Payloads.....	542
<i>Henrik Øvrebo</i>	

B4.6B GENERIC TECHNOLOGIES FOR SMALL SATELLITES (1)

Multi-Purpose Deployable Systems and Capability Development Platform: Preparation and Early Operations of the TPA-1 CubeSat	547
<i>Ben Taylor, Jason Shore, Vernon Lewis, Annalisa Tresoldi, Mahima Fisher, Mattia Marcello Longato, Guglielmo Aglietti</i>	

DEFIANT-XL: A Configurable High-Performance Microsatellite Platform for Modern Satellite Missions	558
<i>Suraj Sridharan, Simon Grocott, Bryan Johnston-Lemke, Benoit Larouche, Robert Zee</i>	
Waratah Seed-1: Australia's First Commercial Ride Share Satellite	568
<i>Xueliang Bai, Patrick Oppel, Iver Cairns, Xiaofeng Wu, Youngho Eun, Ignatius Rivaldi, Andrew G. Dempster, Nick Bennett, Roger Kermode, Laryssa Sueza Raffa, Mohammad Arqam, Matt Ryall, Anita Ho-Baillie, Taofiq Huqi, James Buttenshaw, Peter Toth, Gavin Conibeer, Brian Lim, Harindi Perara, Abishek Shrestha, Quinn Musulin, Zihao Wang, Anne Bettens, Bohan Deng, Ediz Cetin, Tim Parsons, Jason Held, Robert Steel</i>	
Operational Lessons from the CUAVA-2 Satellite: Radiation Counter Experiment and Mission Resilience	577
<i>Xueliang Bai, Patrick Oppel, Iver Cairns, Xiaofeng Wu, Youngho Eun, Anthony Monger, Christopher Betters, Ignatius Rivaldi, Andrew Dempster, Quinn Musulin, Richard Bowden-Reid, Zihao Wang, Anne Bettens, Anita Ho-Baillie, Yijun Huang, Joshua Critchley-Marrows, Julian Guinane, Jason Held</i>	
Bridging Space and Community: Nepal's Indigenous Youth Pioneering CubeSat Technology for Flood, Drought, and Earthquake Resilience	587
<i>Rishav Adhikari, Anjali Dhami, Kriti Dahal, Prem Bahadur Rana, Sangam Thapa, Sajan Duwal, Trishna Shrestha, Abhas Maskey</i>	
Delfi-PQ: In-Orbit Performance and Lessons Learned in Developing a 3P PocketQube.....	609
<i>Mehmet Sevkett Uludag, Stefano Speretta</i>	
Development of CubeSat Systems and Algorithms for Artificial Gravity Validation and Verification- Simulations and Experimental Testing	624
<i>Samuele Enzo, Giovanni Anese, Andrea Valmorbida, Francesco Branz, Carlo Bettanini</i>	
COSMIC – in Space Technology Demonstration CubeSat for Post Mission Disposal and Korean Lunar Rover.....	634
<i>Youngho Eun, Dae-Eun Kang, Dohyeon Park, Dooyoung Jeong, Jaeheon Cheong, Hyeok-Jin Kweon, Gwanghyeok Ju, Namsuk Cho, Jaeho Lee, Sungmoon Lee</i>	
Advantages and Capabilities of Precursor Missions on CubeSats in Preparation of Commercialization and Large-Scale Missions	642
<i>Christopher Schmidt, Benjamin Rödiger, Andres Bolte, Maximilian Spangenberg, Christian Fuchs</i>	
Advancing CubeSat Thermal Management: In-Orbit Demonstration of a TPMS-PCM Heat Sink on Waratah Seed-1.....	649
<i>Laryssa Sueza Raffa, Matt Ryall, Nick Bennett, Lee Clemon</i>	

VOLUME 2

Advanced Dual-Hinge SMA-Based Solar Panel Deployment Mechanism for a 3U CubeSat: Structural Optimization and Multi-Thickness PCB Integration Under JAXA Constraints.....	662
<i>Hery Steven Mindarno, Hirokazu Masui, Mengu Cho</i>	
AMDROHPSat – a 3U CubeSat to Test an Additively Manufactured Deployable Radiator with Oscillating Heat Pipes	672
<i>Benjamin Gillette, Jessica Bleakley, Benjamin Kurtz, John Bellardo</i>	

CyBEEsat: Demonstrating Advanced Technologies for Next-Generation Small Satellite Missions.....	682
<i>Jens Freymuth, Felix Lang, Thee Vanichangkul, Huu Quan Vu, Frank Baumann, Daniel Noack, Harry Adirim, Enrico Stoll, Andres Bolte</i>	

B4.7 CONSTELLATIONS AND DISTRIBUTED SYSTEMS

KEYNOTE: Innovative Space Factory: Transforming Small Satellite Production.....	691
<i>Marco Di Clemente</i>	
Definition of a Small Sats Constellation Geometry for the Detection and Localization of Radio-Frequency Interference Signals	699
<i>Luca Niero, Lucrezia Lovaglio, Fabrizio Stesina, Sabrina Corpino</i>	
Collision Risk Assessment and Avoidance Methods for Safe Autonomous Proximity Operations	705
<i>Giacomo Borelli, Gabriella Vittoria Maria Gaias, Camilla Colombo</i>	
Cluster Flying Algorithm for Sparsely Connected Satellite Swarms.....	717
<i>Pengfei Liu, Zhaokui Wang, Jianpeng Fan</i>	
Unlocking Space: The Impact of Standardization in Launch Services on Accessibility and Innovation.....	737
<i>Nageswara S. N. M. A. Kameswara</i>	
Using Passive Aerodynamic Forces for the Formation Flying Control of the ANSER Cluster.....	747
<i>Iván Castro Fernández, Cesar Arza, Víctor Prieto-Laso, Nicolás Pardina Popp, Carlos Campuzano-Corrales, Santiago Rodríguez-Bustabad</i>	
High Availability Applications by Applying Function as a Service (FaaS) in Satellite Computing Networks	756
<i>Elizaveta Boriskova, Lukasz Zalewski, Carlos Guimarães, Florian Zeiger, Markus Sauer</i>	
ANSER Cluster - Achievements of a Cubesat Distributed System After More than One Year in Orbit	766
<i>Cesar Arza</i>	
In-Orbit Demonstration of Propellant-Less Formation Flight Through Separation of Jointed Two CubeSats in the MAGNARO-II Mission.....	772
<i>Takaya Inamori</i>	
Space Eye (SpEye): Preliminary Design of an On-Orbit Inspection and Formation-Flying Demonstration	775
<i>Vincenzo Capuano, Fabio Saggiomo, Giuseppe Capuano, Giacomo Borelli, Gabriella Vittoria Maria Gaias, Camilla Colombo, Roberto Opromolla, Alessia Nocerino, Matteo Palescandolo, Giuseppe Napolano, Michele Grassi, Giancarmine Fasano, Brunella Montanari, Riccardo Mantellato, Vito Fortunato, Luca Maria Stefano Pascali, Donato Chirulli, Caterina Noberasco, Daniele Urban, Vincenzo Pulcino</i>	
FOCUS X-Band SAR Constellation: AODCS Feasibility Analysis.....	790
<i>Egon Travaglia, Milena Ruiz Benitez, María Eugenia Viere, Kathiravan Thangavel, Pablo Servidia</i>	
Ultra-High Precision Control Method Using an Extended Source Image for the Formation Flying Synthetic Aperture Telescope and Its Application for Telescope-Pointing Controls	807
<i>Kai Nakamura, Norihide Miyamura, Ryo Suzumoto, Satoshi Ikari, Shinichi Nakasuka</i>	

Advances in the Realization of a Federated Laboratories Network for Testing Formation Flying Technologies.....	817
<i>Marco Sabatini, David Paolo Madonna, Leonard Felicetti, Alex Shufflebotham, Saurabh Upadhyay, Konstantinos Platanitis, Rene Laufer, Olle Persson, Harish Rao Ramavaram</i>	

B4.8 SMALL SPACECRAFT FOR DEEP-SPACE EXPLORATION

Using CAPSTONE's Mission Extension to Navigate the Future of Cislunar Technology.....	829
<i>Alec Forsman</i>	
Small Satellites for Lunar Optical and Thermal Imaging.....	846
<i>Steve Eckersley, Nicolò Bernardini, Jonathan Friend, Gavin Johnston, Abigail Harvey, Steven Knox, Alex Da Silva Curiel, Ben Hooper, Martin Sweeting, Neil Bowles, Eloy De Lera Acedo, David Bacon, Will Grainger</i>	
Conceptual Design Study of CubeSat-Based Earth Trojan Asteroid Exploration Accompanying with Korean Sun-Earth L4 Mission.....	856
<i>Gwanghyeok Ju, Soyul Jeon, Junseok Moon, Kwanyeong Kim, Taewoo Jeong, Kyoeun Kim, Youngho Eun, Sang-Young Park</i>	
Assessing Control Robustness of CubeSat Propulsion Systems for (99942) Apophis Proximity Operations	867
<i>Carmine Buonagura, Carmine Giordano, Angelo Cervone, Francesco Toppito</i>	
Deep-Space Prospecting: A Compact Multi-Sensor Spacecraft for M-Type Asteroids	878
<i>Gerrit Olivier</i>	
Radio-Frequency Relative Navigation for Multi-Spacecraft Deep-Space Exploration	882
<i>Ahmed Kiyoshi Sugihara El Maghraby, Tomoyo Shibata, Wataru Torii, Atsushi Tomiki, Hiroshi Takeuchi, Ayako Torisaka, Osamu Mori</i>	
Exploring New Frontiers: The Italian Space Agency's CubeSat Missions to Deimos and Near-Earth Asteroids.....	894
<i>Alberto Fedele, Simone D'Alessandro, Alessandro Turchi, Marco M. Castronuovo, Raffaele Mugnuolo</i>	

B4.9-GTS.5 SMALL SATELLITE MISSIONS GLOBAL TECHNICAL SESSION

Enhancing the Resilience and Evolution of the European Space Suppliers Through a Space Product Qualification (ESPQ) Program.....	898
<i>Anastasia Pesce, Josep Rosello, Sylvain Bouchart</i>	
CubeSat Mission Assurance Through Early-Phase Consultation at the CubeSat Salon	903
<i>Mengu Cho, Yukihiro Kitazawa, Tsuyoshi Nakagawa, Koichi Suzuki</i>	
The Study of New Technique Approach to Identify the Critical Area of AOCS System from Adding Propulsion in the THEOS-3.....	910
<i>Tucksaporn Ruanghiranwong, Chutikan Bootpradit</i>	
Preliminary On-Orbit Results of the Dragonfly 2U CubeSat: Insights from the BIRDS-X Mission	916
<i>Jorge Rubén Casir Ricaño, Sirash Sayanju, Ndukayo Zamba Leonel, Linh Ta, Tasuku Matsui, Guillaume Berson, Eladio Javier Ferrer Torres, Souta Miyajima, Yudai Etsunaga, Rintaro Nakao, Pooja Lepcha, Tharindu Dayarathna, Hirokazu Masui, Takashi Yamauchi, Tetsuhito Fuse, Mengu Cho</i>	

BIRDS-RPM: International Collaboration Project for Emerging-Space Countries' Capacity Building.....	924
<i>Hanadi Abdalla, Ernesto Cortes, Rodrigo Cordova, Victor Schulz, Hirokazu Masui, Reynel Josué Galindo Rosales, Necmi Cihan Örgör, Tetsuhito Fuse, Mengu Cho</i>	
Buccaneer Main Mission CubeSat Lessons Learned.....	932
<i>Monique Hollick</i>	
Design and Operational Feasibility Study of Quasi-Recurrent Orbit of Nano-Satellites Released from the ISS.....	947
<i>Sachika Takeshita, Takayuki Inoue, Shigeru Imai</i>	
Feasibility Study of the SOURCE-2 CubeSat Mission for the Demonstration and Analysis of Critical Technologies for Future Servicing Missions	958
<i>Marlin Kanzow, Justus Goll, Oliver Ley, Denis Oswald, Lea Riesch, Ruben Hamm, Tudor Focsa-Lutz, Daniel Galla, Dalia Konieczny, Manfred Ehresmann, Tom Hahn, Soon Hock Ng, Rohan Ford, Saulius Juodkazis, Sabine Klinkner</i>	
Assembly, Qualification and Operations Plan for the Demonstration of Internet-Of-Things Inter- Satellite Distributed Telemetry Systems: The CORAL Mission.....	977
<i>Michela Boscia, Lorenzo Frezza, Paolo Marzioli, Luca Galassi, Sabrina Aziza Wahib, Raimondo Fortezza, Fabio Santoni, Fabrizio Piergentili</i>	
Developing a Near-Equatorial Low-Cost Small Satellite to Drastically Improve Air Quality Monitoring Over the Tropics	983
<i>Christian Lim, Erick Lansard, Michael Higgins, Steve Yim</i>	
PocketQube with Laser-Interrogated Corner Cube Reflectors (CCRs)	996
<i>Solomon Appekey, Jemimah Kwakuyi, Daniel Asante, Lazar Jestic, Kwame Amoako, Musa Sanoh Kamara, Linus Labik</i>	

B4.IP INTERACTIVE PRESENTATIONS - 32ND IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS

Differential Drag Control of the Liliu CubeSats	1005
<i>Jyh-Ching Juang, Tzu-Wei Hsu</i>	
Intelligent Optimization Algorithm for the Payload Layout of Small Space Debris Removal Satellites Considering Multiple Constraints	1013
<i>Mingwei Jiang, Wei Zhu, Junhui Guo, Yingkai Cai</i>	
Wiring Harness Design and Integration for Flexible Small Satellite Missions	1023
<i>Jacob O'Riordan-Ross, Jakob Lifshits, Robert Zee</i>	
The Configurable Detector Control Solution for Small Satellite Missions	1031
<i>Greg Jolley</i>	
BEE-1000 CubeSat: Protein Crystallization Control and Monitoring in Space	1036
<i>Dooyoung Jeong, Dae-Eun Kang, Jaeheon Cheong, Hyeokjin Kweon, Dohyeon Park, Youngho Eun, Gwanghyeok Ju, Byeong Kon Kim, Jinyang Chung, Huu Vu Pham, Rajesh Kumar Chinnaraj</i>	
Systematic Integration of Sat813 Spacecraft Subsystems: A Comprehensive Overview of Design and Integration.....	1043
<i>Mohammed Altamimi, Eiman Al Shamsi, Lei Deng, Yifei Wang, Yusuf Alqattan, Zayed Alkatheeri, Ahmed Alhadhrami</i>	

Power Optimization and Thermal Analysis of Printed Coils, Compact Coils, and Magnetic Rods for CubeSat Attitude Control	1061
<i>Muhammad Rizwan Mughal, Hassan Ali, Al Moulla Talal</i>	
UNISEC Global's Nano-Satellite IoT Constellation Program by International Collaboration: From Establishment to Planned Operations	1064
<i>Maximilien Berthet, Rei Kawashima, Shinichi Nakasuka</i>	
Real-Time Atmospheric Drag Estimation for Distributed Space Systems Via Inter-Satellite Communication	1071
<i>Ryusei Komatsu, Yuta Takahashi</i>	
GAMALINK: An Enabler for Autonomous Satellite Swarms and Enhanced Collision Avoidance Through Inter-Satellite Communication	1084
<i>Bruno Correia, Pedro Rodrigues, Bruno Correia</i>	
Distributed Game-Theoretic Control for Attitude Alignment in LEO Satellites to Maintain Laser Communication	1090
<i>Jiaqi Min, Jinxiu Zhang, Hui Wang, Taihe Huang, Shen Yan</i>	
Optimizing Satellite Constellations for Maritime Security in African Region, Further Space Applications Across Africa, and Mitigating Space Debris in the Sector	1097
<i>Wanjiku Chebet Kanjumba, Norman Fitz-Coy</i>	
A Low-Cost CubeSat Mission for Monitoring Sea Level Rise in Coastal Regions.....	1113
<i>Helen Haile</i>	
Amateur Space Exploration : Space Knowledge Yielder (SKY).....	1122
<i>Nigar Rustam, Leman Safarli, Sona Rustam, Safarali Safarli</i>	
Uncertainty Analysis for Grabbing Positioning and Release Mechanism in Space-Based Gravitational Wave Observatory	1129
<i>Qian Wen, Kian Hong Low, Zhaokui Wang</i>	
Promoting Space Science Through Small Satellites: Innovations, Discoveries, and Future Prospects	1140
<i>Huseyn Huseynov, Aziz Abbasov</i>	
Building a Sustainable Space Program - Model for Developing Countries.....	1143
<i>Solomon Appekey, Lazar Jeftic, Daniel Asante, Kwame Amoako, Jake Kwaayisi Yawson, Musa Sanoh Kamara</i>	
Proposed CubeSat System for Autonomous Structural Health Monitoring: Integration of Edge Computing and Machine Learning for Anomaly Detection and Orbital Safety	1151
<i>Juan Salvador Palacios Bett, Raúl Gianmarco Chávez Chávez, Omar Blas, Francesco Staffieri, Andrea Staffieri</i>	
Lessons Learned from the Flight and Operation of the Binar 2, 3, and 4 Cube Satellites	1159
<i>Kyle McMullan, Fergus Downey</i>	
A Fuel-Efficient Approach to Multi-Target Visiting for a GEO Sentinel Satellite	1174
<i>Marco Rigamonti, Alessandro Panico, Moreno Peroni</i>	
OrbViz: An Open Source Satellite Mission Visualisation Tool	1183
<i>Robert Mearns, Jonathan Morgan, Miguel Del Castillo, Yijie Tao, Michele Trenti, Airlie Chapman</i>	

A Multi-Stage Deep Neural Network Approach for Angular Pose Estimation in Nanosatellite Capture.....	1192
<i>Daniel Pagliaricci, Tatiana Pazelli</i>	
AI-Driven Fault Detection and Recovery in CubeSat Constellations for Autonomous Space Networking.....	1206
<i>Maaheen Zulfiqar, Rehan Mahmood</i>	
Assessment of the Realization of Value and Benefits of Implementing Agile MBSE for Enterprises in the NewSpace Industry.....	1213
<i>Rehobot Bekele Buruso</i>	
Operational Insights from the PRETTY CubeSat Mission for Future Small Spacecraft Operations.....	1221
<i>Andreas Johann Hörmer, Manuela Wenger, Maximilian Henkel</i>	
Low-Cost Standardized CubeSat Platform for Biomedical Experiments.....	1226
<i>Youhua Ye, Jinxiu Zhang, Yingcheng Wang, Xiaoning Shi, Mei Wan, Mingming Wang, Hang Hu</i>	
Feasibility Study of a Multi-Functional CubeSat for Comprehensive Solar Observations and Space Weather Monitoring.....	1229
<i>Maria Mattiello, Tejas Sharma, Hussaini Tanimu, Arnav Ranjekar, Gagana Yuvaraju</i>	
Software to Enable Batch Acceptance Testing of On-Board Computers for Small Satellites	1244
<i>Andrew Barlow, Jakob Lifshits, Robert Zee</i>	
Sounding Balloons as a Low-Cost Platform for CubeSat Subsystem Validation: Insights from the Cloudview Missions	1254
<i>Theo Fitch, Juan Pablo Puente Hervella</i>	
High Integrity Software for CubeSats and Other Space Missions.....	1265
<i>Carl Brandon</i>	
In-Situ Power System Modeling for Micro/Nano Satellite Autonomous Operation System.....	1270
<i>Yuma Sato, Kikuko Miyata</i>	
Interstellar Small Satellite Study with Insertion into an Exoplanet Atmosphere to Perform Composition Analysis.....	1282
<i>Howard Hall</i>	
Mechanical Characteristics of Variable Shape Membrane for Thermal Control Devices on Small Spacecraft.....	1298
<i>Shungo Kadonosono, Masanori Matsushita, Yuki Akizuki, Hiroaki Tanaka</i>	

B4.IPB INTERACTIVE PRESENTATIONS - 32ND IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS

Opportunistic Space-Based Space Situation Awareness Using Star Trackers	1303
<i>Hayley Richardson, Robin Georg, Zebb Prime, Matthew Tetlow</i>	
Aerodynamic Optimization and Hybrid Neuro-Fuzzy Logic Controller for Orbital Station-Keeping of CubeSats in VLEO.....	1313
<i>Vishwas Jajpura, Rakesh Kumar Sahoo, Ranjay Singh</i>	

Author Index