Poster Sessions

Architectures

Towards the Use of Commercial-off-the-Shelf Small-Satellite Components for Deep-Space CubeSats: A Feasibility and Performance Analysis
Stefano Casini, Iosto Fodde, Steven Engelen, Bert Monna - Hyperion Technologies B.V. (Netherlands);
Angelo Cervone, Eberhard Gill - Delft University of Technology

GPU-Accelerated Optimization of CubeSat Constellation Design Considering Cloud Cover Uncertainty
Hsiu-Hsuan Huang, Hyochoong Bang - Korea Advanced Institute of Science and Technology

What's Next after Industry Disruption by CubeSats? – Industry Disruption by Open Source
Anita Bernie, John Paffett - KISPE Space Systems Limited

Modular Architecture for a Resilient Extensible SmallSat (MARES)
Robin Ripley, James Fraction, Luis Santos Soto, Chuck Clagett, Cody Brewer, Alessandro Geist - NASA Goddard Space Flight Center

Adding Another Dimension to Small Satellite Constellations
Alex da Silva Curiel, Rachel Bird, Peter Senior, Steve Eckelskley, Andrew Cawthorne - Surrey Satellite Technology Ltd; Martin Sweeting - Surrey Space Centre, UK

Facilitating the Development of Innovative Mission Architectures by Connecting the Global Community
Manwei Chan - Massachusetts Institute of Technology; Josh Schertz - Colorado School of Mines; Mary Grace Kalnay - Concordia University

A Tailored Systems Engineering Process for the Development of CubeSat Class Satellites
John Gregory - US Naval Academy

Balancing Project Management, Risk, and Educational Opportunities on the Grissom CubeSat Project
Andrew Keys, Robert Bettinger, Chris Sheffield, Sean Miller, Christopher Lomanno - Air Force Institute of Technology

From Swarm to Starlink: Navigating the Satellite Legal Regime
Charles Mudd - Mudd Law

Optics Testing at Planetary Scale
James Muehlner, Jacob Stern, Chester Gillmore, Caroline Pritchett, Kyle Racette, Juan Fernandez - Planet Labs Inc.

A Step-Change in CubeSat Architecture: Moving from Stacked to Slotted Design
Jeremy Allam, Marcel Lariviere, Piyush Patil - Exo-Space, Inc.

Development, Application, and Distribution of the CubeSat System Reference Model
David Kaslow - SELF
Assembly, Integration & Test

A Last-Minute Upgrade: Rapid Integration of an Opportunity Payload into the TUBIN Mission
Julian Bartholomäus, Clément Jonglez, Philip von Keiser, Julius Léglise, Marc Lehmann, Philipp Werner – Berlin Institute of Technology; Klaus Jäckel, Mathias Reibe - IQ Wireless GmbH

Obtaining a Level of Trust through Cybersecurity Compliance Assessment and Performance Measurement
Sean Kinser, Pete de Graaf, Matthew Stein, Frank Hughey, Rob Roller - MITRE; David Voss, Amanda Salmoriaghi - United States Space Force

SpaceVPX/FMC for Electronics Standardization and Modularity in High-Performance SmallSat Architectures
Rodrigo Diez, Facundo Jorge - Novo Space; Patrick Collier - Aspen Consulting Group; Kerri Cahoy - Massachusetts Institute of Technology

Command & Data Handling

Dedicated On-Board Computer for Active Debris Removal Mission
Michael Juillard, Muriel Richard, Jean-Paul Kneib – Swiss Federal Institute of Technology

Is There A Paradigm Shift for On-Board Computing and Processing?
Anders Petersen, Patrik Sandin, Viktor Fägerlind - RUAG Space AB (Sweden)

PyCubed Mini: An Open-Source, Computational Platform for Education and Research in the Pocketqube Form Factor
Andrew Gatherer, Max Holliday, Zachary Manchester - Stanford University

Single Event Latch-up (SEL) Automatic Detection and Recovery for the RT6804-1 Battery Stack Monitor
Kristen Chong, Tom Decker, Nathan Wendel, Amado Gomeri - Analog Devices, Inc.

CASPR: Autonomous Sensor Processing Experiment for STP-H7
Seth Roffe, Theodore Schwarz, Thomas Cook, Evan Gretok, Aidan Phillips, Noah Perryman, Justin Goodwill, Mitchell Moran - National Science Foundation

Communications

Inter-Satellite Data Relay System (IDRS) for LEO Satellites Using a Commercially Available GEO Satellite System
Khai Pang Tan, Eyal Trachtman - Addvalue Innovation Pte Ltd

5G for LEO – Technical Challenges and Initial Results
Per Koch, Henrik Krogh Moller - Gatehouse Telecom A/S, Denmark I
A Technical Evaluation of Integrating Optical Inter-Satellite Links into Proliferated Polar LEO Constellations
Joshua Ingersoll - Georgia Institute of Technology

Precision Pointing Considerations for Long-Distance Free-Space Optical Communications
John Beasley, Thomas Walsh, Eric Forstner - BEI Precision

LinkStar-TRK, a Small Satellite Global Communications and Tracking System: System Design, Application and Test Flight Results from Low Earth Orbit
Andrew Santangelo - Sci_Zone

Compact Laser Communication Terminal for Small Satellites
Francesco Sansone, Alessandro Francesconi, Andrea Vettor - Stellar Project SRL

DISCO One - Reflective Free-Space Optical Communication Technology Demonstration for CubeSats
Raphael Böckle, Philip Olbrich, Andreas Sinn, Thomas Riel, Georg Schitter - TU Wien Space Team

Architecture and Design of the McMaster NEUDOSE Communications Radio Subsystem
Will Donaldson, Andrei Hanu, Bruce Power - McMaster University; Eric Johnston - Bubble Technology Industries Inc.; Devlin Klepp, Zack Manesiotis, Shashank Manikonda, Hira Nadeem - McMaster University

Competition

Open-Source Flight Computer Platform for CubeSats
Charles Lindsay, Ethan Sit - MIT

The Quickly Universally Integrated CubeSat: Rapid Integration for Small Packages
Kevin Arellano Esquerra, Christopher Artates, Michael Pham, Benjamin Narita, Eduardo Corpuz - California Polytechnic State University

Design of a Custom Secondary On-Board Computer for the NEUDOSE CubeSat Mission
Paula Bosca, John Barberiz, Hira Nadeem, Mostafa Ayesh, Aaron Bruinsma, Michael Chen - McMaster University; Akiv Jhirad - Western University; James Warburton - McMaster University

MAGNETO: Mapping the Earth's Magnetic Field at 300km Using COTS Sensors
Lizette Villafana, Rahul Rughani, Claire Carlton, Jessica Yuan, Liam Broadus, Warren Su, Ava Norrell, David Barnhart - University of Southern California - Space Engineering Research Center

Development of Electrodynamic Tethers for Propellantless Propulsion in Low-Earth Orbit
Mitchel Miller, Derek Cheyne, Zoe Nathanson, Maya Pandya, Anish Rajesh, Samriddhi Sharma, Liam Spence, Brian Gilchirst - University of Michigan

AMARIS: A CubeSat Based Lunar Rover
Christina Cross, Victoria Cross, Caeden Dooner, Owen Welch, Kevin Simmons - BLUECUBE Aerospace-Wolverine CubeSat Development Team

Flight Software Implementation and Verification on IRIS CubeSat
Yun-Rong Yang, Ke-Yen Hsu, Jyh-Ching Juang - National Cheng Kung University
Anti-Windup Compensator Approach to Nanosatellite Fault Tolerant Architecture  
Ikechukwu Ofodile - Tartu Observatory; Nkemdilim Ofodile-Keku - Air Force Institute of Technology; 
Andris Slavinskis - Aalto University; Gholamreza Anbarjafari - Tartu Observatory

Thin Satellite Plasma Research Data Communication  
Christine Groves - US Coast Guard Academy

BLADE: The Balloon Launch Assessment Directive for Engineers and the Use of the CubeSat Form Factor for an Introductory Systems Engineering Education  
Jacob Harbuck, William McKinney, Michael Pham, Gustavo Salgado, Zachary Gaines, Eduardo Corpuz - California Polytechnic State University

Pure Ionic Electrospray Thruster Control Electronics Architecture and Performance  
Jeffrey Asher, Robert Antypas, Joseph Wang - University of Southern California - Space Engineering Research Center

Cislunar Explorers: Lessons Learned from the Development of an Interplanetary CubeSat  
Aaron Zucherman, Aaron Buchwald, George Orellana, Sydney Rzepka, Elliot Kann, Kelly Jawork, Michael Zakoworotny, Charlie Robinson - Cornell University

Development of an Antenna Positioner for S- and X- Band Ground Segment  
Kerry Clapham - University of Canterbury; Robin McNeill - Great South; Chris Hann - University of Canterbury

Internet of Things (IoT) Payload in IRIS CubeSat - student poster comp  
Ke-Yen Hsu - National Cheng Kung University Taiwan

AI-Based Novel Camera System with Software Defined Radio Transceiver On-board  
Aysha Alharam, Ebrahim Almansoori, Ahmed Bushlaibi, Prashanth Marpu, Hani Saleh - Khalifa University of Science and Technology

Utilizing Deep Reinforcement Learning to Effect Autonomous Orbit Transfers and Intercepts via Electromagnetic Propulsion  
Frank Soboczenski - King's College London; Gabriel Sutherland - Oregon State University; Athanasios Vlontzos - Imperial College London

A CubeSat Flight Demonstration of Constrained Attitude Control  

Bammsat-on-BEXUS: A Technology and Operation Demonstration of a Biocubesat Platform on a Stratospheric Balloon Flight Educational Program  
Aqeel Shamsul, Giovanni Sinclair, Adrien Bolland, Amin Chabi, Miguel Martinez, Mateusz Zalasiewicz, David Cullen - Cranfield University; Mike Cooke - University of Exeter

Project ASTER: True Microgravity during Free-Fall with Attitude Stabilisation  
Flavia P’erez C’amara, Noel Janes, Jonathan Lange - Lulea University of Technology, Sweden
Methodologies for Development of a Modular Wiring Harness for Use in Small Satellite Constellations
Katie Gwozdecky – University of Toronto

Low Cost Magneto-Sphere Measurement: Leveraging Fusion of Low Data Rate Downlink with Amateur Radio Community
Claire Carlton, Everett Maness, David Barnhart - University of Southern California - Space Engineering Research Center

Light-1: A 3U CubeSat for Detecting and Monitoring Terrestrial Gamma Ray Flashes – System Design and Concept of Operations
Aaliya Khan, Prashanth Marpu - Khalifa University of Science and Technology

A TLE-based Algorithm for Correcting Empirical Model Densities During Geomagnetic Storms
Daniel Brandt, Charles Bussy-Virat, Aaron Ridley - University of Michigan

Electrical Power Systems

Solar Panels for Scientific Missions Using CubeSat Platforms for LEO, MEO and GTO
Miguel Vazquez, Vicente Diaz, Victor Burgos, Jorge Garcia, Francisco Lazaro Ismael Sanchez - DHV Technology

Power Beaming Validation for Space-Based Solar Cells: Survey of Laser Power Beaming Experiments
Kane Hurt, Michael Sanders, Jin Kang - US Naval Academy

SmallSat Space Solar Power: A Pathway to a Sustainable Future
Thomas Sinn, Thomas Lund, Alexander Titz, Markus Geiss - Deployables Cubed GmbH; Pauline Faure - California Polytechnic State University

SparkWing: The Off-the-Shelf Solar Array for Small Satellites
Matthijs vn der Kooij - SparkWing/Airbus

Flight & Ground Software

A Novel Approach to CubeSat Flight Software Development Using Robot Operating System (ROS)
Samuel Buckner, Carlos Carrasquillo, Riccardo Bevilacqua, Marcus Elosegui - University of Florida

Describing SmallSat Missions with MetaSat
Daina Bouquin - Harvard University / Center for Astrophysics; Pierros Papadeas - Libre Space Foundation; Daniel Chivvis, Allie Williams - Harvard University / Center for Astrophysics; Vasilis Tsiligiannis, Fredy Damkalis - Libre Space Foundation; Katie Frey - Harvard University / Center for Astrophysics

The Development and Application of the F Prime MagicDraw Plug-In User Handbook
Design of Modular Star Tracker Software  
Luca Soares, John Bellardo, Pauline Faure, Ryan Nugent, Dave Pignatelli, Alicia Johnstone - California Polytechnic State University

Ground Systems & Operations

Using Shapley Values and Game Theory to Measure the Effectiveness of Different Satellite Image Products in Hybrid Constellations  
Sacha Nandlall - Defence Research and Development Canada; Koreen Millard - Environment and Climate Change Canada

Evolving NOAA’s LEO Ground System to Support Future Missions  
Andrew Royle, Heather Kilcoyne - Joint Polar Satellite System Ground Project Manager

Virginia Tech Ground Station - Satellite Mission Data Warehouse  
Gustavo Gargioni, Seth Hitefield, Zachary Leffke, Dr. Jonathan Black - Virginia Tech

Guidance, Navigation & Control

Power Optimal Slew Maneuvers in Support of Small Satellite Earth Imaging Missions  
Tyson Smith, Tanner Jones, Skylar Cox - Space Dynamics Laboratory; Greg Droge - Utah State University; Amber Jones - Utah Water Research Laboratory

Ultra-Low SWaP Relative Navigation  
Morgan Redfield, Chris Owens, Andrew Horchler - Astrobotic Technology

Development of a Low-Cost Multi-Camera Star Tracker for Small Satellites  
Hongrui Zhao, Michael Lembeck - University of Illinois at Urbana-Champaign

Using Passive Attitude Control to Decrease CubeSatellite Complexity  
Alexander Barovier, Andrei Hanu, Devan Wagner, Soo Hyun Byun, William Ward - McMaster University; Eric Johnston - Bubble Technology Industries Inc.

Instrumentation

Quantum Key Distribution from CubeSats  
Cassandra Mercury, Doug McNeil, Sonali Mohapatra, Steve Greenland - Craft Prospect

Miniaturization of Remote Sensing Scientific Instrument  
Tonda MacLeod - Nuvotronics; Mauricio Sanchez Barbetty - Jet Propulsion Laboratory; David Miller - Nuvotronics
AGU Remote Innovative CubeSat Alert System
Tomoya Watanabe, Takanori Sakamoto, Motoko Serino, Maomao Duan, Yuki Gouma, Yasuyo Hata, Hikaru Takahashi - Aoyama Gakuin University; Teruaki Enoto - Kyoto University

A Unique 16U CubeSat Architecture for 1.5m GSD Commercial Earth Observation
Matthys Cronje - Simera Sense; Jacob Mølbach Nissen - Space Inventor; Jacu Vos, Eben Grobbelaar, Johan Du Plooy - Simera Sense; Søren Pedersen, Leonardo Ghizoni - Space Inventor

James Bell - Arizona State University; Lindsay Papsidero, Timothy Linn - Lockheed Martin Space Systems Company; David Thomas - Arizona State University; Lon Levin - Geoshare; Scott Smas - Arizona State University

Direction-of-Arrival Estimation for Signal-of-Opportunity Receiver
Manohar Deshpande - NASA Goddard Space Flight Center

Challenges and Opportunities for CubeSat Detection for Space Situational Awareness Using a CNN
Craig Kief, Andrew Cochrane, Matt Hannon, Brian Zufelt, Jim Aarestad, Steve Lindsley, Evan Kain - Cosmiac

MicroMHiDe: A Multispectral Sub-Meter Resolution Payload for SmallSats
Roberto Di Paola, Vincent Moreau - AMOS SA; Benoit Deper - Aerospacelab; Helen Srese, Luca Maresi - European Space Agency

Low-SWAP Laminated Electrostatic Analyzer for CubeSat Applications
Hayden Richards, Matthew McHarg, Jacob Harley - US Air Force Academy; Carlos Maldonado - Los Alamos National Laboratory

Thermal Infrared Imager Development for CubeSat Constellation
Lucas Krempel - Technical University of Munich/OroraTech; Reinhard Kienberger - Technische Universität München; Sanket Shah, Thomas Grübler – OroraTech

NEUDOSE: A CubeSat for Dosimetry of Charged and Neutral Particles
Devan Wagner, Devin Burke, Hira Nadeem, Andrei Hanu, Bruce Power, Soo Hyun Byun, Eric Johnston - McMaster University

Trajectory Optimization for the Virtual Telescope for X-Ray Observations
Kyle Rankin, Hyeongjun Park - New Mexico State University; John Krizmanic, Neerav Shah - NASA Goddard Space Flight Center; Steven Stochaj - New Mexico State University; Asal Naseri - Space Dynamics Laboratory

New Zealand’s First Science Satellite Mission
Nicholas Rattenbury - The University of Auckland

Next On The Pad

From the First Slovak Satellite to High Energy Astrophysics
Leaving No CAPSTONE Unturned: How a CubeSat Pathfinder Will Enable the Lunar Gateway Ecosystem
Thomas Gardner, Bradley Cheetham - Advanced Space, LLC

Small and Large Satellites: Joint Operations in Earth Observation
Max Gulde, Marius Bierdel - Fraunhofer Institute for High-Speed Dynamics, Ernst-Mach Institute, EMI; Christian Williges - German Aerospace Center DLR; Christian Mittermaier, Martin Schimmerohn, Clemens Horch, Frank Schäfer - Fraunhofer Institute for High-Speed Dynamics, Ernst-Mach Institute, EMI

SmallSats in Context: Deployment Trends and Outlook
Phil Smith - Bryce Space and Technology

A Pico-Satellite Design to Demonstrate Trajectory and Science Applications
Mehmet Sevket Uludag, Stefano Speretta, Alessandra Menicucci, Michael van den Bos, Casper Hendrik Broekhuizen, Maxime Jetskalina Marianne Bielders, Jasper Haenen, Eberhard Gill - Delft University of Technology

Wide Field of View Testbed
Matthew Navarro - Space and Missile Systems Center - Space Development and Test Directorate; Russ Benson, Joel Gussy, Brian Hardy, Dee Pack, Darren Rowen, Deb Salvaggio - The Aerospace Corporation

Propulsion

Multiple Water Propulsion Systems: All Propulsive Capabilities for CubeSats From LEO to Deep Space
Jun Asakawa, Kazuya Yaginuma, Yuichi Nakagawa – Paul Blue; Hiroyuki Koizumi - University of Tokyo/Pale Blue

Development of a Super-Small Solid Rocket Motor for OMOTENASHI
Naoki Morishita, Keiichi Hori, Junji Kikuchi, Tatsuaki Hashimoto - Japan Aerospace Exploration Agency (JAXA); Sago Yoshimichi, Kiyoyuki Watanabe, Hiroyuki Sasayama - Kawasaki Heavy Industries, Ltd.; Hiroshi Sumida - NOF Corporation

REGULUS Iodine Electric Propulsion System Integration in CubeSats’ Platforms and Testing
Fabio Trezzolani, Nicolas Bellomo, Marco Manente, Davide Scalzi, Matteo Duzzi, Devis Paulon, Alessandro Barbato, Elena Toson - T4i

Water Vapor Integrated Satellite Propulsion System for Orbit Maintenance in Low-Earth Orbit Nanosatellite Missions
Ian Hardy, Jin Kang - US Naval Academy

A High-Fidelity Ground-Based Space Environment Testbed Utilizing Magnetic Levitation for Fully Integrated Small Spacecraft
Jeremy Bruggemann, Jarrett Kaczmarski - NASA Johnson Space Center

Easy Aligned Telescope for CubeSat
Jun Hiarakawa, Katsuaki Kubo - KIYOHARA OPTICS Inc.; Hiroyuki Nakagawa - Crystal Optics Inc.; Hirohiko Shinonaga - KIYOHARA OPTICS Inc.; Okiharu Kirino - Crystal Optics Inc.

**Space Access**

**VEGA SSMS HEX Module - Aggregation and Integration from EU to French Guiana**
F. Fragnito, M. Mariani - SAB Launch Services S.r.l.

**CarboNIX: Introducing a New Microsatellite Separation System for Rideshare Missions on Multiple Launch Vehicles**
Connor Jonas, Michael Tolstoj - Exolaunch GmbH

**HylImpulse - Hybrid Propulsion Based Launch Vehicles for Small Satellites**
Goutham Karthikeyan, Mario Kobald, Christian Schmierer, Ulrich Fischer, Konstantin Tomilin - HylImpulse Technologies B.V.

**Seed Round Raised for a Browser-Based Mission Management Software**
Ksenia Lisitsyna - Precious Payload Inc.

**MIURA 5 – The European and Reusable Microlauncher for CubeSats and Small Satellites**
Pablo Gallego Sanmiguel - PLD Space

**Structures & Mechanisms**

**Glue-infused Rotating Nanofibers Net (GRoNNet) for Capturing Space Debris - A Novel Debris Capturing System**
Sharanabasaweshwara Asundi - Old Dominion University; Sneha Raibagi, Rashmi Kasargod Pallam, Amogh Anantha Murthy, Prithvi Monteiro, Amit Gadag – People’s Education Society University; Oleksandr Kravchenko - Old Dominion University

**VT ThickSat: A Passive Deployer Mechanism for a Carbon Fiber Tape Spring in the ThinSat Program**
Robert Engebretson, Minzhen Du, Gustavo Gargioni, Hovhannes Avagyun, Bryce Clegg, Derick Whited, Kevin Shinpaugh, Dr. Jonathan Black - Virginia Tech

**F-molding: A New Production Method for Largely Aspherical Mirrors of Cordierite**

**VT ThickSat: A Scalable Chassis in the ThinSat Program**
Derick Whited, Minzhen Du, Gustavo Gargioni, Robert Engebretson, Dr. Jonathan Black, Kevin Shinpaugh - Virginia Polytechnic Institute

**Thermal**
Thermal Material Selection in Small Satellite Interfaces to Optimize Cost, Performance and Assembly Time
Craig Green, Leo Prinzi - Carbice Corporation

Evaluating the Performance Benefits of a Smart Radiator Device in Small Spacecraft Missions, for Earth Orbits and Beyond
Alina Toidjanov, Aimee Carvey - University of Manitoba; Jean-Francois Thibault - Magellan Aerospace; Philip Ferguson - University of Manitoba; Emile Haddad - MPB Technologies, Inc

Year in Review

A Small Satellite Industrial Base Study: Foundational Findings
Jonathon Pellish - NASA Goddard Space Flight Center; Elizabeth Klein-Lebbink, Allyson Yarbrough - The Aerospace Corporation

Introduction of Space Projects in Public Elementary School at Mogi Das Cruzes, Brazil
Sandro Shoiti Sato, Débora Soares Alves Teixeira, Vanessa Rodrigues Barreto Aguilar - Prefeitura Municipal de Mogi das Cruzes; Lidia Hissae Shibuya Sato – Technological Institute of Aeronautics

The Alabama Experiment on Galactic-Ray In-Situ Shielding (AEGIS) Project
Jared Fuchs - University of Alabama in Huntsville; Michael Halvorson - Auburn University

The Age of Advancing PocketQube Technology
Tom Walkinshaw, Stefan Iwanicki, Constantin Constantinides, Greg Stewart - Alba Orbital