



# 1<sup>st</sup> International Academy of Astronautics Latin American Symposium on Small Satellites: Advanced Technologies and Distributed Systems

Colomb Institute

National University of San Martín Campus, Miguelete

Buenos Aires, Argentina

March 07<sup>th</sup> to March 10<sup>th</sup> 2017



UNIVERSIDAD  
NACIONAL DE  
SAN MARTÍN



INSTITUTO  
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# PROGRAM COMMITTEE

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A. da Silva Curiel; SSTL - UK

R. Laufer; Baylor Univ. - USA

R. Nader; EXA - Ecuador

S. Nakasuka; UoT – Japan

S. Neeck; NASA – USA

F. Ongaro; ESA – Italy

M. Ovchinnikov; KIAM - Russia

R. Sanchez Peña; ITBA - Argentina

A Valenzuela; IAA - Argentina

## OBJECTIVE

*To provide a forum for scientists, engineers, managers and students, to exchange information about small satellites. Topics will cover the technological state of the art and the planned and on-going programs and missions. It will have a worldwide vision, but focused on the needs and developments of Latin America, and it is open to a general view but with emphasis on advanced technologies and distributed platforms and payloads.*

## General Schedule

<u>Tuesday March 7th</u>	<u>Wednesday March 8th</u>	<u>Thursday March 9th</u>	<u>Friday March 10th</u>
09:00-10:15 Welcome Opening speeches 1 <sup>st</sup> Keynote Presentation	09:00-10:20 3 <sup>rd</sup> Session - LATIN AMERICAN SMALL SATELLITE PROJECTS II	09:00-10:20 7 <sup>th</sup> Session - SATELLITE TECHNOLOGIES: INSTRUMENTS	09:00-10:20 11 <sup>th</sup> Session - SATELLITE TECHNOLOGIES: AIT
10:15-10:30 Coffee Break	10:20-10:40 Coffee Break	10:20-10:40 Coffee Break	10:20-10:40 Coffee Break
10:30-12:00 2 <sup>nd</sup> to 4 <sup>th</sup> Keynote Presentations	10:40-12:00 4 <sup>th</sup> Session - GROUND SEGMENT	10:40-12:00 8 <sup>th</sup> Session - SATELLITE TECHNOLOGIES: SOFTWARE I	10:40-12:00 12 <sup>th</sup> Session - SATELLITE TECHNOLOGIES: SUBSYSTEMS I
12:00-13:20 Lunch Break Invited by Institute at Stands venue.	12:00-13:20 Lunch Break (on your own)	12:00-13:20 Lunch Break (on your own)	12:00-13:20 Lunch Break (on your own)
13:20-15:05 1 <sup>st</sup> Session - SMALL SATELLITES WORLDWIDE: ACHIEVEMENTS AND TRENDS	13:20-15:05 5 <sup>th</sup> Session - SEGMENTED ARCHITECTURES/DISTRIBUTED SYSTEMS	13:20-15:05 9 <sup>th</sup> Session - SATELLITE TECHNOLOGIES: SOFTWARE II	13:20-15:05 13 <sup>th</sup> Session - SATELLITE TECHNOLOGIES: SUBSYSTEMS II
15:05-15:20 Coffee Break	15:05-15:20 Coffee Break	15:05-15:20 Coffee Break	15:05-15:20 Coffee Break
15:20- 16:10 Poster and Stands Session	15:20- 16:10 Poster and Stands Session	15:20- 16:10 Poster and Stands Session	15:20- 17:05 14 <sup>th</sup> Session - SATELLITE TECHNOLOGIES: SUBSYSTEMS III
16:15- 18:00 2 <sup>nd</sup> Session - LATIN AMERICA SMALL SATELLITES PROJECTS I	16:15- 18:00 6 <sup>th</sup> Session - 'SPACEALIZATION' (COTS SPACE QUALIFICATION)	16:15- 18:00 10 <sup>th</sup> Session - UNIVERSITY PROJECTS/EDUCATION	17:15- 18:00 Symposium Conclusions and Awards
	21:00 Dinner for Program Committee and local authorities.		18:00 Symposium Band performance 21:00 Gala Dinner at restaurant. (Need to buy ticket)

ID and Symposium documentation retrieval.

Monday March 06<sup>th</sup> 10:00-13:00; 14:00-17:00

Tuesday March 07<sup>th</sup> 08:20-08:50

Opening Speeches

Tuesday March 07<sup>th</sup> 09:00

Dr. Livio Gratton, Director of the Colomb Institute

Dr. Carlos Ruta, President of UNSAM

Dr. Conrado Varotto, Director of CONAE

Dr. Francisco Mendieta, Vice-President of the IAA

KEYNOTE PRESENTATIONS

Tuesday March 07<sup>th</sup> 09:45-12:00

‘The International Academy of Astronautics at the forefront of small satellites activities.’

Rainer Sandau, IAA

‘Ongoing and Projected small satellite projects with Latin American participation: LIT’s perspective’

Geilson Loureiro, INPE

‘Innovations in the small satellite sector.’

Ben Stern, SSTL

‘Small missions for technology at the European Space Agency’

Franco Ongaro, ESA

## Session 1: SMALL SATELLITES WORLDWIDE: ACHIEVEMENTS AND TRENDS

Tuesday March 07<sup>th</sup> 13:30-15:05

Chair: R. Laufer, IAA

- The CHEOPS Mission – 13:20 – 13:40
  - o Andrea Fortier –
    - CHS University of Bern
- Commercial missions using cube/nanosats – 13:40 – 14:00
  - o Otavio Durão (1), Gilberto Rigobello (2), Celso Ribeiro –
    - (1) INPE – National Institute for Space Research, (2) CRON Systems and Technologies Ltd.
- Multi-criteria Assessment for the Optimization of Lean Satellite Programs – 14:00 – 14:20
  - o Pauline Faure –
    - Kyushu Institute of Technology, Laboratory of Spacecraft Environment Interaction Engineering
- The small satellite family BIRD, TET-1 and BIROS for fire reconnaissance and technological experiments – 14:25 – 14:45
  - o T. Terzibaschian, W. Halle, W. Bärwald, C. Schultz, E. Lorentz –
    - DLR, Institute of Optical Sensor Systems
- Making Small Lunar Missions Viable – 14:45 – 15:05
  - o Jonathan Friend (1), Chris Saunders (1), Susan Jason (1), Alex da Silva Curiel (1), Sir Martin Sweeting (1), Ben Stern (1), Matt Cosby (2), Bernhard Hufenbach (3), James Carpenter (3), Richard Fisackerly (3) –
    - (1) Surrey Satellite Technology Ltd., (2) Goonhilly Earth Station Ltd., (3) European Space Agency (ESA)

## Session 2: LATIN AMERICA SMALL SATELLITES PROJECTS I

Tuesday March 07<sup>th</sup> 16:15-18\_00

Chair: J. S. Almeida, INPE

- First On-Board Results from the Tancredo-1 Picosat Mission - 16:15 – 16:35
  - o Candido Osvaldo de Moura (1), Auro Tikami (2), Walter Abrahão dos Santos (2) –
    - (1) Tancredo Neves School, (2) National Space Research Institute – INPE
- Pico and Nanosatellite System Architecture Development Process – 16:35-16:55
  - o Lucas Lopes Costa, Geilson Loureiro, Eduardo Escobar Burger
    - National Institute for Space Research
- Legal and Regulatory Framework of Small Satellites in Latin America: current state and perspective – 16:55 – 17:15
  - o Juan Cruz Gonzalez Allonca –
    - Universidad Nacional de La Matanza (UNLaM)
- Satellite Engineering Support System – 17:20 – 17:40
  - o Gustavo Wiman & Al. –
    - INVAP
- Structural design considerations and lessons learned from NuSat-1&2 – 17:40 – 18:00
  - o Carlos Rabsium Aramburu –
    - Satellogic

## Session 3: LATIN AMERICAN SMALL SATELLITE PROJECTS II

Wednesday March 08<sup>th</sup> 09:00-10:20

Chair: R. Nader, EXA

- Highlight on engineering process for satellite operations: phases, procedures, tools and training concepts – 9:00 – 9:20
  - o Axel D. Dente, Eduardo Danizio –
    - INVAP
- SETec: The First Small-Satellite Dedicated Laboratory of Central America – 9:20 – 9:40
  - o Adolfo Chaves Jiménez (1); Marco Gómez Jenkins (1); Johan Carvajal Godínez (2) –
    - (1) Costa Rica Institute of Technology, (2) Delft University of Technology
- Spatial exploration in Paraguay: State of the Art. A brief history for the project of the first satellite mission of the Republic of Paraguay – 9:40 – 10:00
  - o Ing. Enrique Buzarquis (1), Ing. Raúl Amarilla (2), DSc. Benjamín Barán (3) –
    - (1) Fundación Parque Tecnológico Itaipu, (2) Itaipu Binacional, (3) Facultad Politécnica - Universidad Nacional de Asunción
- Power modeling and budgeting design and validation with in-orbit data of two commercial LEO satellites – 10:00 – 10:20
  - o Alan Kharsansky –
    - Satellogic

## Session 4: GROUND SEGMENT

Wednesday March 08<sup>th</sup> 10:40-12:00

Chair: A. Dente, INVAP

- All Digital Receiver Simulation Model - 10:40 – 11:00
  - o Catalano N. (1,2); Roddick C. (1,2); Costanzo Caso, P. (1,3); Bulus Rossini, L. (1,3) –
    - (1) Instituto Balseiro, (2) CNEA, (3) CONICET
- Multi-mission Small Satellite Operation Data Center – 11:00 – 11:20
  - o Marcelo Essado, Mariam Acuña Gomez –
    - EMSISTI Space Systems & Technology
- Use of Drone Squadrons as a Test Bench for Segmented-Architecture Satellite Missions – 11:20 – 11:40
  - o Esteban Carranza, Bruno Marengo, Ricardo Medel –
    - Ascentio Technologies S.A.
- Global network operations of CubeSats constellation – 11:40 – 12:00
  - o Mengu Cho (1); Apiwat Jirawattanaphol (1); Naomi Kurahara (2) –
    - (1) Kyushu Institute of Technology, (2) Infostellar Inc.
    -

## Session 5: SEGMENTED ARCHITECTURES/DISTRIBUTED SYSTEMS

Wednesday March 08<sup>th</sup> 13:20-15:05

Chair: B. Stern, SSTL

- Distributed Space Platform for Lateral SAR Swath Revisit: Geometry, Guidance and Control
  - o Claus Rosito (1), Martín España (2) – 13:20 – 13:40
    - (1) Universidad de Buenos Aires (UBA), (2) CONAE
- Macro and Micro Segmentation: Two New Enabling Technologies for Advanced Satellite Segmented Architecture Networks – 13:40 – 14:00
  - o Pablo Ferreyra (1); Juan Fraire (1); Fabian Gomez (2); Carlos Barrientos (3); Raoul Velazco (4) –
    - (1) Universidad Nacional de Cordoba, (2) Universidad Nacional de Chilecito, (3) Comision Nacional de Actividades Espaciales (CONAE), (4) Universite Grenoble-Alpes
- A segmented architecture approach to provide a continuous, long-term, adaptive and cost-effective glaciers monitoring system based on DTNbased communications and standard cubesat platforms – 14:00 – 14:20
  - o Carlos Barrientos (1), Anabella Ferral (1), Leandro Cara (1), Juan Fraire (2), Raoul Velazco (2), Pablo Madoery (3), Pablo Ferreyra (3) –
    - (1) Comisión Nacional de Actividades Espaciales (CONAE), (2) Université Grenoble-Alpes, (3) Universidad Nacional de Cordoba
- Distributed system for agile development of advanced and specific Earth Observation solutions – 14:25-14:45
  - o Pablo Amieva, Paola Pezoimburu, Javier Urien –
    - SUR Emprendimientos Tecnológicos S.R.L.
- Calibration Schedules for Agile, Small Satellite Constellations using Unmanned Aerial Vehicles with Satellite-to-Air Communication Links – 14:45 – 15:05
  - o Dr. Sreeja Nag –
    - NASA Ames Research Center and Bay Area Environmental Research Institute

## Session 6: 'SPACEALIZATION' (COTS SPACE QUALIFICATION)

Wednesday March 08<sup>th</sup> 16:15-18:00

Chair: F. Hisas, CONAE

- Radiation Tolerance Evolution of CMOS Integrated Circuits – 16:15 – 16:35
  - o Roberto Manuel Cibils –
    - INVAP
- An Autonomous Redundant Attitude Determination System developed to NanosatC-BR2 – 16:35 – 16:55
  - o Duarte, Ricardo O. (1), Vale, Samuel R. C. (1), Martins-Filho, Luis S. (2) –
    - (1) Universidade Federal de Minas Gerais, (2) Universidade Federal do ABC
- LabOSat as a versatile payload for small satellites: first 100 days in LEO orbit - 16:55 – 17:15
  - o G.A. Sanca (1); M. Barella (2,3); F. Gómez Marlasca (4); G. Rodriguez (2); D. Martelliti (2); L. Patrone (2); P. Levy (3,4); F. Golmar (1,2,3) –
    - (1) ECyT-UNSAM, (2) CMNB-INTI, (3) CONICET, (4) CAC-CNEA, GAIyANN
- Novel Strategy of Selection and Adaptation of Latest Technology Electronic Components for Its Use in Space – 17:20 – 17:40
  - o Roberto Manuel Cibils –
    - INVAP
- COTS MOS dosimetry on the MeMOSat Board, results after 2.5 years in orbit – 17:40 – 18:00
  - o José Lipovetzky (2,3,4); Macarena Rodríguez Cañete (1); Gabriel Redin; Adrián Faigón (1,3); Mariano García Inza (1,3); Sebastián Carbonetto (1,3); Martín Echarri (5); Federico Golmar (3,5,6); Fernando Gomez Marlasca (2); Mariano Barella (2,3,5); Gabriel Sanca (6); Pablo Levy (2,3,6) –
    - (1) Facultad de Ingenieria - Universidad de Buenos Aires (UBA), (2) Comision Nacional de Energia Atomica (CNEA), (3) CONICET, (4) Instituto Balseiro, (5) Instituto Nacional de Tecnologia Industrial (INTI), (6) Universidad Nacional de San Martin (UNSAM)

## Session 7: SATELLITE TECHNOLOGIES: INSTRUMENTS

Thursday March 9<sup>th</sup> 9:00-10:20

Chair: T. Terzibaschian, DLR

- Feasibility Analysis of an Optical Payload in a Lightning Detection Cubesat – 9:00 – 9:20
  - o Candido Osvaldo de Moura (1), Eric Langner (2), Kleber P. Naccarato (1), Walter Abrahão dos Santos (1) –
    - (1) National Space Research Institute – INPE, (2) University of Applied Sciences Jena
- Evapotranspiration estimation based on hourly LST observations acquired by a constellation of small satellites: a mission concept – 9:20 – 9:40
  - o Francisco Grings (1); Veronica Barraza (1); Esteban Roitberg (1); Dara Entekhabi (2); Mariano Franco (1); Pablo Perna (1) –
    - (1) IAFE Remote Sensing Group, (2) Massachusetts Institute of Technology (MIT)
- Calibration of magnetic sensors for small satellites – 9:40 – 10:00
  - o Cesar Bertucci; Matías Barber; Cintia Bruscantini; Daniel Gómez –
    - Instituto de Astronomia y Física del Espacio (IAFE)
- Soil moisture retrieval based on coherent analysis of Illuminators Of Opportunity: a prospect for small satellites applications – 10:00 – 10:20
  - o Mariano Franco (1); Matias Barber (1); Francisco Grings (1); Esteban Roitberg (1); Emanuel More (2); Cintia Bruscantini (1); Pablo Perna (1) –
    - (1) IAFE Remote Sensing Group, (2) Instituto Gulich, CONAE

## Session 8: SATELLITE TECHNOLOGIES: SOFTWARE I

Thursday March 09<sup>th</sup> 10:40-12:00

Chair: S. Nag, NASA

- Model And Simulation Based Satellite Engineering – 10:40 – 11:00
  - o Gustavo Wiman; Leonardo Handszok –
    - INVAP
- Design and evaluation of an embedded system for small satellites in Colombia based on light linux – 11:00 – 11:20
  - o Roberto Ferro Escobar –
    -
- Modeling And Analysis of Fatigue Loads of a 1U Nanosatellite Structure, Using Aluminium Alloy 6061-T6 – 11:20 – 11:40
  - o Jonathan López Burgos –
    - Bolivarian Agency for Space Activities (ABAE)
- Autonomous On Board Mission Planning for LEO Satellites – 11:40 – 12:00
  - o Pucci, N. (1); Alonso, R. (2); Kuba, J. (2); Garcia Franchi, G. (2) –
    - (1) MTS-UFS-CONAE, Cordoba, (2) Comision Nacional de Actividades Espaciales (CONAE)



## Session 9: SATELLITE TECHNOLOGIES: SOFTWARE II

Thursday March 09<sup>th</sup> 13:20-15:05

Chair: G. Wiman, INVAP

- Modelling of the Interoperability Between On-Board Computer and Payloads of the NANOSATC-BR2 With Support of the UPPAAL Tool – 13:20 – 13:40
  - o Almeida, D. P., Mattiello-Francisco, F. –
    - Instituto Nacional de Pesquisas Espaciais – INPE
- A Software Defined Radio Approach to Ground Operations of Small Satellites
  - o Molano, D. J. P. (1); Santos, D. S. (2); Pereira, E. W. R. (3); Dos Santos, W. A. (1) –
    - (1) Instituto Nacional de Pesquisas Espaciais, (2) Instituto Tecnológico de Aeronáutica, (3) AMSAT-BR – Brazilian Radio Amateur Satellite Corporation
- A review on the application of Real Time Operational Systems on Small Satellites – 14:00 – 14:20
  - o Lucas Ramos Hissa; Rogerio Atem De Carvalho –
    - Centro de Referência em Sistemas Embarcados e Aeroespaciais (CRSEA), Instituto Federal Fluminense (IFF)
- Remote programming system for  $\mu$ -SAT3's On-Board Computer – 14:25 – 14:45
  - o Fabio N. Nazzi; Santiago A. Rodriguez Gonzalez; Pablo G. Morales –
    - (1) Centro de Investigaciones Aplicadas, DGIyD, Fuerza Aerea Argentina (CIA-DGID), (2) Universidad Nacional de Cordoba
- An Environment for Developing Software for Small Satellites – 14:45 – 15:05
  - o Rogerio Atem De Carvalho, Galba V. S. Arueira, Sara C. M. de Souza –
    - Centro de Referência em Sistemas Embarcados e Aeroespaciais (CRSEA), Instituto Federal Fluminense (IFF)

## Session 10: UNIVERSITY PROJECTS/EDUCATION

Thursday March 09<sup>th</sup> 16:15-18:00

Chair: E. Roggero, CONAE

- Higher Education in Space Topics: CONAE and its partnership with National Universities for Graduate Studies and Research – 16:15 – 16:35
  - o Livio Gratton (1,2), Leonardo de Ferraris (3), Marco Alvarez Reyna (4) –
    - (1) CONAE, (2) UNSAM, (3) UNC, (4) VENG
- ESAT – 16:35 – 16:55
  - o Ignacio Barrios –
    - Universidad Politécnica de Madrid (UPM)
- PocketQube, the next little thing by come – 16:55 – 17:15
  - o Gustavo Carpignano –
    - Diysatellite
- Development of magnetometer and sun sensor based orbit and attitude determination for CubeSat – 17:20 – 17:40
  - o Maria E. Pereyra (1); Roberto Alonso (2); Jose Kuba (2) –
    - (1) MTS-UFS-CONAE, Cordoba, (2) Comision Nacional de Actividades Espaciales (CONAE)
- UNISEC-Global – Past, Present and Future – 17:40 – 18:00
  - o Rei Kawashima –
    - UNISEC-Global

## Session 11: SATELLITE TECHNOLOGIES: AIT

Friday March 10<sup>th</sup> 09:00-10:20

Chair: C. Barrientos, CONAE

- Using Fault Injection on the Nanosatellite Subsystems Integration Testing – 9:00 – 9:20
  - o Carlos L G Batista (1); Andre Corsetti (2); Fatima Mattiello-Francisco (1) –
    - (1) Brazilian National Institute for Space Research – INPE, (2) Omega 7 Systems
- Technological facilities for the integration and testing of solar arrays for space applications – 9:20 – 9:40
  - o M. Alurralde (1), C.G. Bolzi (1), J. Di Santo (1), J. Fernández Vázquez (1), J.A. García (1), L. González (1), V. Goldbeck (1), M.L. Ibarra (1), M.G. Martínez Bogado (1,2), S. Muñoz (1), J.M. Olima (1), J.I. Pérez (1), D. Raggio (1), O. Romanelli (1), C. Rinaldi (1), H. Socolovsky (1), M.J.L. Tamasi (1,2) –
    - (1) Comision Nacional de Energia Atomica (CNEA), (2) CONICET
- An approach for Assembly, Integration and Verification of a 6U CubeSat and the achievements of the ITASAT Project – 9:40 – 10:00
  - o Sato, Lidia H. S.; Santos, Hélio A.; Oliveira, Emerson H. S.; Januzi, Rafael B.; Makita, Daniel H.; Paula, Linélcio, S.; Azevedo, Jéssica G.; Crucioi, Breno A.; Carrara, Valdemir; Costa, Luís E. V. L. –
    - Brazilian Space Agency (AEB)
- Building low-cost nanosatellites: the importance of a proper environmental tests campaign – 10:00 – 10:20
  - o J. S. Almeida –
    - Instituto Nacional de Pesquisas Espaciais – INPE
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## Session 12: SATELLITE TECHNOLOGIES: SUBSYSTEMS I

Friday March 10<sup>th</sup> 10:40-12:00

Chair: M. Cho, Kyushu Inst. of Technology

- An experimental high precision GNSS receiver for small satellites navigation – 10:40 – 11:00
  - o Juan G. Díaz, G. Ramón López La Valle, Santiago Rodríguez, Germán Scillone, Lucas Mártire, Ernesto M. López, Gerardo L. Puga, Jorge Cogo, Javier A. Smidt, Javier G. García, Pedro A. Roncagliolo –
    - Grupo SENyT - Facultad de Ingeniería, Universidad Nacional de La Plata (UNLP)
- FPGA-based Platform for SDR Prototyping – 11:00 – 11:20
  - o Nicolas Asselle, Maximiliano Bustos, Martin Ayarde, Juan Leal Licudis, and Graciela Corral Briones –
    - Laboratorio de Comunicaciones Digitales, IDIT UNC-CONICET
- Enhancing Contact Graph Routing Forwarding Performance for Segmented Satellites Architectures – 11:20 – 11:40
  - o Madoery, Pablo (1); Zerbini, Carlos A. (2,3); Fraire, Juan A. (2,1); Finochietto, Jorge M. (2,1) –
    - (1) CONICET, (2) Universidad Nacional de Cordoba, (3) Universidad Tecnologica Nacional (UTN)
- Adding Store and Forward Features To Quantum Key Distribution Space Network For Secure Global And Space Communications With Cubesats – 11:40 – 12:00
  - o Msc. Eng. Jaime Jaramillo F. (1), Cmdr. Ronnie Nader (2) –
    - (1) Quantum Aerospace Research Institute (QAS), (2) Ecuadorian Civilian Space Agency (EXA)

## Session 13: SATELLITE TECHNOLOGIES: SUBSYSTEMS II

Friday March 10<sup>th</sup> 13:20-17:05

Chair: I. Belokonov, Samara University

- Electric Power Subsystem Module's Architecture for Microsatellite  $\mu$ SAT-3 – 13:20 – 13:40
  - o Gonzalez Reyes, Reinaldo; Prystupczuk, Federico; Rodriguez Gonzales, Santiago A.; Brito, Hector –
    - Centro de Investigaciones Aplicadas, DGlyD, Fuerza Aerea Argentina
- Multi-Variable Optimization Applied to Power Subsystem – 13:40 – 14:00
  - o Montesana, Adrian; Alonso, Roberto; Bisaccio, Gustavo –
    - MTS-UFS-CONAE, Cordoba, Comision Nacional de Actividades Espaciales (CONAE)
- The ResistoJet as a simple and cost-effective propulsion system for nano- and microsatellites – 14:00 – 14:20
  - o Dr. Ing. Pablo Leslabay, Lic. Ricardo Lauletta, Ing. Patricio Pedreira –
    - Instituto Tecnológico de Buenos Aires (ITBA)
- Numerical analysis tool for design and optimization of a coaxial pulsed plasma thruster – 14:25 – 14:45
  - o Carlos A. Vitulich (1); Andres M. Cimino (1,2); and Hector H. Brito (1) –
    - (1) Universidad Nacional de Cordoba, Centro de Investigaciones Aplicadas, (2) DGlyD, Fuerza Aerea Argentina (CIA-DGID)
- Disruptive Architecture Applied to Commercially Viable Dedicated Cubesat Launcher – 14:45 – 15:05
  - o Loureda, Oswaldo B. (1,2), Gany, Alon (3) –
    - (1) Faculdade União das Américas - Uniamérica Faculty of Engineering, (2) Acrux Aerospace Technologies, (3) Technion – Israel Institute of Technology Faculty of Aerospace Engineering

## Session 14: SATELLITE TECHNOLOGIES: SUBSYSTEMS III

Friday March 10<sup>th</sup> 15:20-17:05

Chair: P. Levy, UNSAM

- Development of solar panels for small space applications at CNEA – 15:20 – 15:40
  - o H. Socolovsky (1,2); S. Muñoz (1,2); D. Raggio (1); C. Bolzi (1,2); Alan Kharsansky (3) –
    - (1) Departamento Energía Solar - Centro Atómico Constituyentes – (2) Comisión Nacional de Energía Atómica, Universidad Nacional de general San Martín, (3) Satellogic
- Deployable Multi Panel Solar Array For Low Cost 1U Cubesat Missions – 15:40 – 16:00
  - o Cdr. Ronnie Nader, Gerard Nader Drouet –
    - Ecuadorian Civilian Space Agency (EXA)
- Aerodynamic stabilization system for nanosatellite use inflatable construction – 16:00 – 16:20
  - o Igor Belokonov, Nicolas Falbo –
    - Samara National Research University
- Simulation of GNSS Observables for LEO Satellites Using High-Fidelity Models – 16:25 – 16:45
  - o Ignacio Santiago Husain (1); Martín España (2) –
    - (1) Facultad de Ingeniería - Universidad de Buenos Aires (UBA), (2) CONICET
- Definition and implementation of “attitude modes” in the DLR small satellites BIRD, TET-1 and BIROS – adoption to developing requirements – 16:45 – 17:05
  - o Thomas Terzibaschian (1), Olaf Maibaum (2), C. Raschke (3) –
    - (1) DLR, Institute of Optical Sensor Systems, (2) DLR, (3) Simulation and Software Technology, Astro und Feinwerktechnik GmbH

## Symposium Conclusions and Awards

Friday March 10<sup>th</sup> 17:15-18:00

### Poster Sessions

Tuesday March 07<sup>th</sup> 15:20-16:10

Wednesday March 08<sup>th</sup> 15:20-16:10

Thursday 09<sup>th</sup> 15:20-16:10

- Micro EM Drives As Actuators In Attitude Control System For Cubesats -
  - o Msc. Eng. Jaime Jaramillo F.
    - Quantum Aerospace Research Institute (QAS)
- A Nation-Wide Ground Station Network: the RIBRAS Project -
  - o Rodrigues Amaduro, Lucas; De Carvalho, Rogerio Atem; Moura, Luis Gustavo Lourenço
    - Centro de Referência em Sistemas Embarcados e Aeroespaciais (CRSEA), Instituto Federal Fluminense (IFF)
- Design of a 1U CubeSat Platform For Educational Purposes -
  - o A. O. Rêgo; M. Greco; M. C. Pereira
    - Federal University of Minas Gerais
- An opportunity to train students in the sciences and space technologies -
  - o Edgardo Roggero (1,5), Nicolas Alberto (1,4), Leandro Cara (1,2), Ezequiel Gonzalez (1,3), Matias Vanni (1,5)
    - (1) Comision Nacional de Actividades Espaciales (CONAE), (2) Universidad Nacional de Cordoba FAMAF, (3) Universidad Nacional de La Matanza (UNLAM), (4) Universidad Tecnologica Nacional (UTN) Facultad Regional Mendoza, (5) Universidad Tecnologica Nacional (UTN) Facultad Regional Cordoba
- A Nanosatellite Data Center software tool for Technology Readiness Assessment -
  - o Andre F. Novais, Maria de Fátima Matiello-Francisco
    - National Institute of Space Research , São José dos Campos
- Enhancing Successful Data Delivery in Small Satellite Networks -
  - o Finochietto, Jorge M. (1,2); Fraire, Juan (1,2); Raverta, Fernando (2); Madoery, Pablo (2); Cherini, Renato (1)
    - (1) Universidad Nacional de Cordoba, (2) CONICET
- Applications, Capacities and Design Concepts of Real Time Simulators for Satellite Missions -
  - o Adrian Garcia; Leonardo Handszok
    - INVAP
- A Capacitor-Charging Power Supply Using a Series-Resonant Topology for the Ablative Pulsed Plasma Thruster P4S-2 –
  - o Mauro G. Gomez; Hector H Brito
    - Centro de Investigaciones Aplicadas, DGlyD, Fuerza Aerea Argentina

- Increase in the Efficiency of the Channel in the Communication System of an Earth Observation Satellite by Means of the Implementation of Variable Coding and Modulation –
  - Marcos F. Pérez (1); Pablo D. Pareja Obregón (2); Maximiliano Erazú (3)
    - (1) MTS- UFS-CONAE, (2) Universidad Nacional del Sur, (3) Grupo de Comunicaciones Espaciales, Comisión Nacional de Actividades Espaciales (CONAE)
  
- Earth Horizon Sensor for Satellite Applications -
  - Santiago A. Rodríguez González; Marcos A. Brito; Mauro Gómez; Reinaldo González Reyes; and Pablo G. Morales
    - Centro de Investigaciones Aplicadas, DGIyD, Fuerza Aérea Argentina, Universidad Nacional de Córdoba
  
- Characterization of Solar Sensors for Small Satellites –
  - A. Moreno; M. Tamasi; M. Martínez Bogado; C. Bolzi; M. Díaz Salazar; N. Kondratiuk
    - CONICET, CNEA
  
- Performance Assessment of On-board GNSS Navigation Algorithms for Low Earth Orbit Satellites –
  - Jorge Cogo (1), Javier G. García (1), Ernesto M. López (1), Gerardo L. Puga (1), Pedro A. Roncagliolo (1), Carlos H. Muravchik (2)
    - (1) Grupo SENyT, (2) Instituto LEICI, Universidad Nacional de La Plata (UNLP)
  
- An Approach for On-Board Software Reuse Applied to Small Satellites -
  - Demetryus Vitale Junqueira, Walter Abrahão dos Santos
    - National Space Research Institute – INPE
  
- Optical Design of Multispectral Cameras for Space Applications
  - Ariel Drucaroff
    - INVAP
  
- Desarrollo de un simulador de escenarios de bajo costo para misiones satelitales – 13:40 – 14:00
  - Gerardo Di Claudio, Daniel Ferrochio, Ezequiel Gómez, Santiago Lovera, Bruno Marengo, Ricardo Medel -
    - Ascentio Technologies S.A.