Best Papers of SpaceOps Conference 2021

SpaceOps 2021 – Virtual Edition, hosted by the
South African National Space Agency (SANSA)

The following 30 "best papers" were selected from over 250 presented at the SpaceOps 2021 virtual conference in May 2021. These Peer reviewed papers represent current trends, technical innovations, and lessons learned in disciplines related to space operations, thus presenting the most up-to-date innovative tools, processes and procedures in the field.
The selections also include two papers written and presented by student authors for outstanding technical merit.
The collection of papers will be updated by the authors and published by Springer in the SpaceOps conference book series in mid-spring 2022 (hardcover and ebook).

	Paper Title	Lead Author Affiliation
1	From Theory to Practice: Operational Implementation of Telemetry Outlier Detection at EUMETSAT	LSE Space GmbH
2	Multivariate Anomaly Detection in Discrete and Continuous Telemetry Signals Using a Sparse Decomposition Into a Dictionary	CNES
3	Operating a Crewed Spacecraft in the Age of Commercial Space Using Private/Government Partnership	NASA
4	Gbps High Speed Antenna Arraying for Ground-Based Network	NASA
5	A novel alternative to bundle protocol for handling data transmission across disruption-tolerant networks	University of Maryland
6	CCSDS Implementation, Concept, and Architecture of the Psyche Mission's End-to-End Information System	JPL
7	An International Standard Procedure for Managing Spacecraft Emergency Cross Support (SECS)	EssenTech GmbH
8	SEC_LAB: A Secure Communications Testbed for Space Missions	ESA
9	New questions opened by the big data in the world of the science data processing center for Gaia mission in CNES	CNES
10	MASCOT – a Mobile Lander on-board Hayabusa2 Spacecraft – Operations on Ryugu	DLR
11	InSight-SEIS instrument deployment operations on Mars	CNES
12	Attitude Control on GRACE follow-on Experiences from the first years in orbit	DLR
13	Orbital and attitude control of Spectrum-Roentgen-Gamma observatory under technical constraints	ISAE-Supaero University of Toulouse
14	A Mobile and Compact Control Center for Quick Decentral Satellite Access	DLR
15	EUCLID'S Health Monitoring System: Combining and Expanding ESA'S Operational Capabilities into new Use Cases	ESA
16	ISS Payload Operations Training During the COVID-19 Pandemic: Impacts and Solutions	NASA
17	Space Operations fueling space awareness and science education in South Africa – supporting STEM education in the knowledge economy	SANSA
18	Designing a Console for Future Space Operations	Pennsylvania State University
19	PLUMMRS: A Collection of Plan Ledgers and Unified Maps for Multi-Robot Safety	TRACLabs, Inc

20	Evolution of the Canadian RADARSAT Satellites	CSA
21	A Holistic Approach to Ensure Safe Non-Routine Operations	Avanti Communications Group plc
22	Lessons Learned in the Introduction of Automation and Autonomy to International Space Station (ISS) Robotics Operations Planning	NASA
23	Parker Solar Probe Pre-Launch Mission Operations Orbit-in-the-Life Mission Simulation	Johns Hopkins University Applied Physics Lab
24	Operability on the Europa Clipper Mission: Challenges and Opportunities	JPL
25	A Rapid Re-targetable Goals Driven Approach to Autonomous Spacecraft Plan Repair with Concurrent Actions	Beijing Institute of Technology
26	PINTA – one Tool to plan them all	DLR
27	Virtual Reality in Support of Space Weather Forecasting	ESA
28	Ariane 6 Launch System Combined Tests Operations	ESA
29	Optimal reaction wheel control with stiction and resonance avoidance	University of Manitoba (Best Student Paper 1)
30	South African Satellite Operations Testbench for Capacity Building in Space Operations Training and Research	University of Cape Town (Best Student Paper 2)

Compiled by Craig Cruzen, Editor of the 2021 SpaceOps Conference Book
The working title of the book is:

"Space Operations:Beyond Boundaries to Human Endeavours"
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Due to be published by Springer in the mid-spring of 2022.