

System Engineering and Long-Term Space Travel

Held at the Global Space Exploration Conference (GLEX 2025)

New Delhi, India
7-9 May 2025

ISBN: 979-8-3313-2106-2
DOI: <https://doi.org/10.52202/080555>

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

SYSTEM ENGINEERING AND LONG-TERM SPACE TRAVEL - SESSION 1

System Engineering for the Integrated Testing of Sensors and NGCE in Chandrayaan-3 Mission.....	1
<i>Chinmay Kumar Rajhans, Ankur Sharma, Vijaya Ganesh Padavala, Kalpana Kalahasthi, Veeramuthuvel P</i>	
Integrated Battery Monitoring System Using Multi-Cell Battery Monitoring Chip for Deep Space missions.....	16
<i>Priyadarshini S, Antony P. P, Jagadeesh Raju Karnam, Devendra Singh, Jayakrishnan V</i>	
Conceptual Design of Origami-Inspired Deployable Habitats for Sustainable Lunar Settlement.....	21
<i>Rishika Banerjee, Gagana Y</i>	

SYSTEM ENGINEERING AND LONG-TERM SPACE TRAVEL - SESSION 2

Future Space Suit Interface Design for Long-Term Travel, Lunar, and Mars Human Exploration.....	28
<i>Thomas Cernev</i>	
Electrical and Electronics Parts Repair for Long-Term Space Travel	35
<i>Arun K, Preethi Thomas, Rajesh Mohod, A Muralikrishna</i>	
Current Status of Technologies to Monitor and Mitigate Thruster Plasma Effects on Spacecraft Systems.....	41
<i>Tarushi Bhatnagar, Sai Susmitha Guddanti, Marcos Fernandez-Tous</i>	
Exploring the Innovative Use of Nitinol Shape Memory Alloy for Satellite Antenna Deployment: Feasibility Analysis and Future Potential	56
<i>Aagam Jain, Ravi Kumar Varma, Kashyap Vaghela</i>	
Design Exploration and Optimization of Inflatable Multi-Airbag System for Impact Attenuation of Human Space Capsules	59
<i>Prashant Iyer, Mansoor K. S., Sheetal Antony</i>	
Cycle Life Studies on Lithium Ion Cells for Extended Space Missions.....	67
<i>Deepak Srivastava, Bibin John</i>	

SYSTEM ENGINEERING AND LONG-TERM SPACE TRAVEL - IP SESSION

Design and Implementation of a Soft Gripper Robotic Arm for Advanced Autonomous Operations in Space Exploration.....	71
<i>Aayushi Dwivedi, Jiya Narula</i>	
Investigating Potential Applications of Lorentz Force for Spacecraft Formation Flying with Reduced Fuel Consumption	80
<i>Shalini Suresh, Alexey Tikhonov, Dipak Kumar Giri</i>	
Thermal Protection System Architecture and Developmental Challenges for Human Space Flight Mission - A Perspective	86
<i>Dileep R, SS Vinod, Kodeeswaran M, DT Ray</i>	

Author Index