

The Lunar Frontier: Navigation and Communications Systems for the Moon

Aveiro, Portugal, 6-8 September 2023

WORKSHOP ORGANIZERS:

- Alex Minetto, Ph.D (Politecnico di Torino),.
- Javier Ventura-Traveset, Ph.D. (European Space Agency) [TBC],
- Mario Musmeci (Italian Space Agency) [TBC].

INTRODUCTION

As we prepare for the next era of human exploration on the Moon, the need for robust navigation and communication systems becomes increasingly critical. “The Lunar Frontier” workshop will bring together experts from academia, industry, and government agencies to discuss and explore the latest advancements in navigation and communication (NavCom) technologies for the Moon.

The workshop will cover topics such as lunar mission orbit determination and time transfer, localization and tracking technologies, GNSS systems, optical and radio frequency communication systems, and network architectures for lunar surface communications.

Participants will gain insights into the unique challenges and opportunities presented by the lunar environment and learn about the latest technological solutions to overcome these challenges. In addition to technical sessions, the workshop will include panel discussions and networking opportunities to foster collaborations and partnerships between attendees. Participants will also have the opportunity to attend demonstrations of navigation and communication systems for the Moon. The Lunar Frontier workshop is open to researchers, engineers, scientists, and students interested in the fields of space exploration, navigation, and communication systems. Whether you are working on developing new technologies or interested in learning about the latest advancements in the field, the Lunar Frontier workshop is the perfect platform to connect, share knowledge, and collaborate with like-minded individuals.

CALL FOR PAPERS

You are invited to submit full papers to the technical session foreseen in this workshop. This session aims at providing peer-reviewed, high-quality works to present new research and developments in the field. The session will mainly address the physical layer (e.g., signal design, spectrum allocation) and algorithms (e.g., state estimation, sensors fusion). Areas of interest for this session include, but are not limited to, the following topics:

- Advances in Navigation, Guidance, and Control (GNC) systems for lunar missions
- Advances in Navigation and Communications Systems for lunar missions (NavCom technologies)
- Use of Global Navigation Satellite Systems (GNSS) for spacecraft navigation and orbit determination at cislunar and lunar distances
- Signal design and optimization for communication and ranging
- Positioning, Navigation, and Timing technologies for autonomous navigation in space missions
- Collaborative navigation algorithms and exploitation of signals of opportunity (SOP) for space missions
- Progresses of planned missions in lunar and cislunar volumes and to the moon’s surface
- Advances in time transfer and precise orbit determination applied to Lunar Mission
- Future navigation and communication systems

Papers must be authored using the IEEE conference template. 4 to 6 pages papers are accepted for submission. The overall paper length must NOT exceed 6 pages.

Participation and attendance in the **NavCom4Moon** Workshop is included for IEEE WiSEE 2023 registrations.



universidade
de aveiro



Politecnico
di Torino

