

IAF HUMAN SPACEFLIGHT (HSF) COMMITTEE

Introduction

The IAF Human Spaceflight (HSF) Committee organizes the Human Spaceflight Symposium (B3) comprising a total of ten sessions. These sessions include the Overview session (B3.1) and multiple sessions focusing on relevant human spaceflight topics. The symposium invites papers on all aspects of on-going and planned human spaceflight including the design, development, operations, utilization, and future plans of space missions involving humans. The scope covers private and government past, present and planned space missions, and programmes in LEO and beyond. The Symposium also features discussions on preparations for the launch of new HSF capabilities and collaborative efforts of human and robotic systems and technologies. Special emphasis is applied to the peaceful use of HSF, fostering international cooperation, and the socio-economic benefit for all mankind.

- [Governmental Human Spaceflight Programmes \(Overview\)](#)
- [Commercial Human Spaceflight Programmes](#)
- [Utilization & Exploitation of Human Spaceflight Systems](#)
- [Flight & Ground Operations aspects of Human Spaceflight - Joint Session of the IAF Human Spaceflight and IAF Space Operations Symposia](#)
- [Astronaut Training, Accommodation, and Operations in Space](#)
- [Human and Robotic Partnerships in Exploration - Joint session of the IAF Human Spaceflight and IAF Exploration Symposia](#)
- [Advanced Systems, Technologies, and Innovations for Human Spaceflight](#)
- [Human Space & Exploration](#)
- [Human Spaceflight Global Technical Session](#)
- [Interactive Presentations - IAF HUMAN SPACEFLIGHT SYMPOSIUM](#)

Summary

- In September 2023, 10 segments for the two side boosters of the SLS rocket that will be used to launch the Orion spacecraft with four humans on board for a trip around the Moon during Artemis II mission as early as November 2024 were assembled. Also, NASA is currently targeting December 2025 for launching a crewed landing mission to the lunar South Pole as part of its Artemis program. The crew modules for NASA's Artemis II, III, and IV missions have been stationed at NASA's Kennedy Space Center, with the three spacecraft undergoing different stages of production for their upcoming launch dates. NASA technicians installed the heat shield on the Artemis II Orion capsule.
- The second SpaceX Starship test took place on November 18, 2023, including a successful second stage separation, and Super Heavy flip and boost-back burn prior to breakup; the second stage reached a peak of 150km prior to losing telemetry after 8 minutes of flight.
- Rocket and Space Corporation Energia under the contract with "Roscosmos" completed Critical Design Review for the new Russian Orbiting Station (ROS) in polar Earth orbit (inclination 96.8 deg.) last summer.
- China in May and October 2023 sequentially launched Tianzhou6 cargo ship, Shenzhou16 and Shenzhou17 manned spaceships. Six Chinese astronauts have been sent into space and entered China Tiangong space station, which signifies the opening of new application and development stage of space station mission. This year marks the 20th anniversary of China's first manned space mission, and the step of Chinese human spaceflight is becoming more and more increasingly steady.
- NASA raised the possibility of extending ope-

rations at the ISS beyond 2030 versus accepting a gap in continuous human operations in LEO as the ISS is retired and commercial destinations become operational.

- The number of potential commercial LEO destinations continues to increase, with Axiom, Blue Origin, Voyager Space, Above Space, Vast, and Gravitics all proposing commercial space stations.
- Sierra Space is poised to deliver the first Dream Chaser spaceplane to NASA's Neil A. Armstrong Test Facility in Sandusky, Ohio, in preparation for its first planned mission to the International Space Station in 2024. The first crewed test flight of Boeing's CST-100 Starliner has been pushed back an additional month, to no earlier than mid-April 2024, NASA officials said in a release in October 2023. Axiom Space named the full crew of four people who will fly to the ISS on the Ax-3 mission using SpaceX's Crew Dragon spacecraft, no sooner than January 2024.

Highlights

- SpaceX completed its second Starship test on 18 November 2023, including a successful second stage separation and Super Heavy flip and boost back burn prior to breakup.
- Artemis II is currently scheduled for a lunar fly-by no earlier than November 2024.
- NASA and Roscosmos will continue to cooperate under the agreement on cross-flights to the ISS.
- Roscosmos and Energia Corporation completed CDR for the new Russian Orbiting Station (ROS) in polar Earth orbit.
- Celebration of 25th anniversary of the International Space Station operation in orbit (20 November 1998).
- Celebration of the 20th anniversary of China's first manned space mission (15-16 October 2003).

Future Outlook

- Roscosmos and NASA have agreed on an additional flight for an American astronaut on board Russia's Soyuz MS spacecraft. The flight is part of an agreement between Roscosmos and NASA on cross-flights to the ISS.

- China plans to send astronauts to the Moon, a space official said in May 2023. The overall goals are to realize China's first manned landing on the Moon before 2030, carry out scientific exploration and related technological demonstration and short term stay system for crews, and develop human-robot integrated testing and other key technologies. To realize this mission, all relevant systems will be researched and developed, including the Long March 10 new crew-carrying rocket, a lunar landing capsule and a lunar extravehicular suit.
- India's government announced in October 2023 that it intends to put astronauts on the Moon by 2040 and construct a space station in the middle of the next decade. A government statement "comes as India works towards developing independent human spaceflight capabilities and a first crewed flight in 2025."
- Trends and areas of focus:
 - » Increased interagency and commercial collaboration for future missions;
 - » Increasing commercial destinations in LEO;
 - » Renewed commercial and agency interest for human lunar exploration;
 - » Increased interest in developing the cis-lunar economy.

Committee activities

- Establishment of the subcommittees focused on Human Space Stations utilization in LEO and on Space Habitats
- IAC 2024: PE, Special Sessions (SpS), and IAF GNF planning has been announced. Committee members will propose ideas and potential sponsors for a session.