NASA
Human Research Program

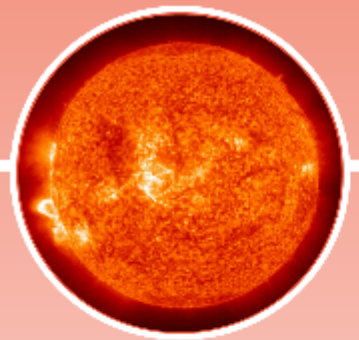
Director, David Baumann

Human Research Program

Mission:

To enable space exploration beyond low Earth orbit by reducing the risks to human health & performance

Hazards and Risks of Human Spaceflight



Space Radiation

- Radiation Carcinogenesis
- Non-Ionizing Radiation

Isolation & Confinement

- Inadequate psychosocial adaptation within a team
- Adverse cognitive or behavioral conditions

Distance from Earth

- Inflight medial conditions
- Inadequate human systems integration architecture
- Inadequate food and nutrition
- Ineffective or toxic medications

Lack of Gravity

- Reduced muscle size
- Bone fracture
- Sensorimotor alterations
- Host-microorganisms interactions
- Orthostatic intolerance
- Cardiac rhythm problems
- Renal stone formations
- Reduced aerobic capacity
- Cardiovascular adaptions
- Urinary retention
- Crew egress
- SANS

Hostile/Closed Environment

- Toxic exposure
- Hypoxia
- Decompression sickness
- Celestrial dust exposure
- Carbon dioxide exposure
- Electrical shock
- Sleep loss
- Hearing loss
- Altered immune response
- Reduced EVA performance
- Injury from dynamic loads

Mars Crew Health Capability Gaps

Earth-Independent Human Operations

Computational Injury & Anthropometric Models

Mars Duration Food System

Exploration Exercise Countermeasures

Mars Duration Effects on Human Physiology

Understanding Individual Variability in Spaceflight

Risk Mitigations for Vehicle Atmospheres

Sensorimotor Countermeasures

International Space Station

HUMANITY'S HOME IN ORBIT

Our State-of-the-art Microgravity Lab

Commercial Space Opportunities

Funded Commercial Partnerships

National Aeronautics and
Space Administration

NASA

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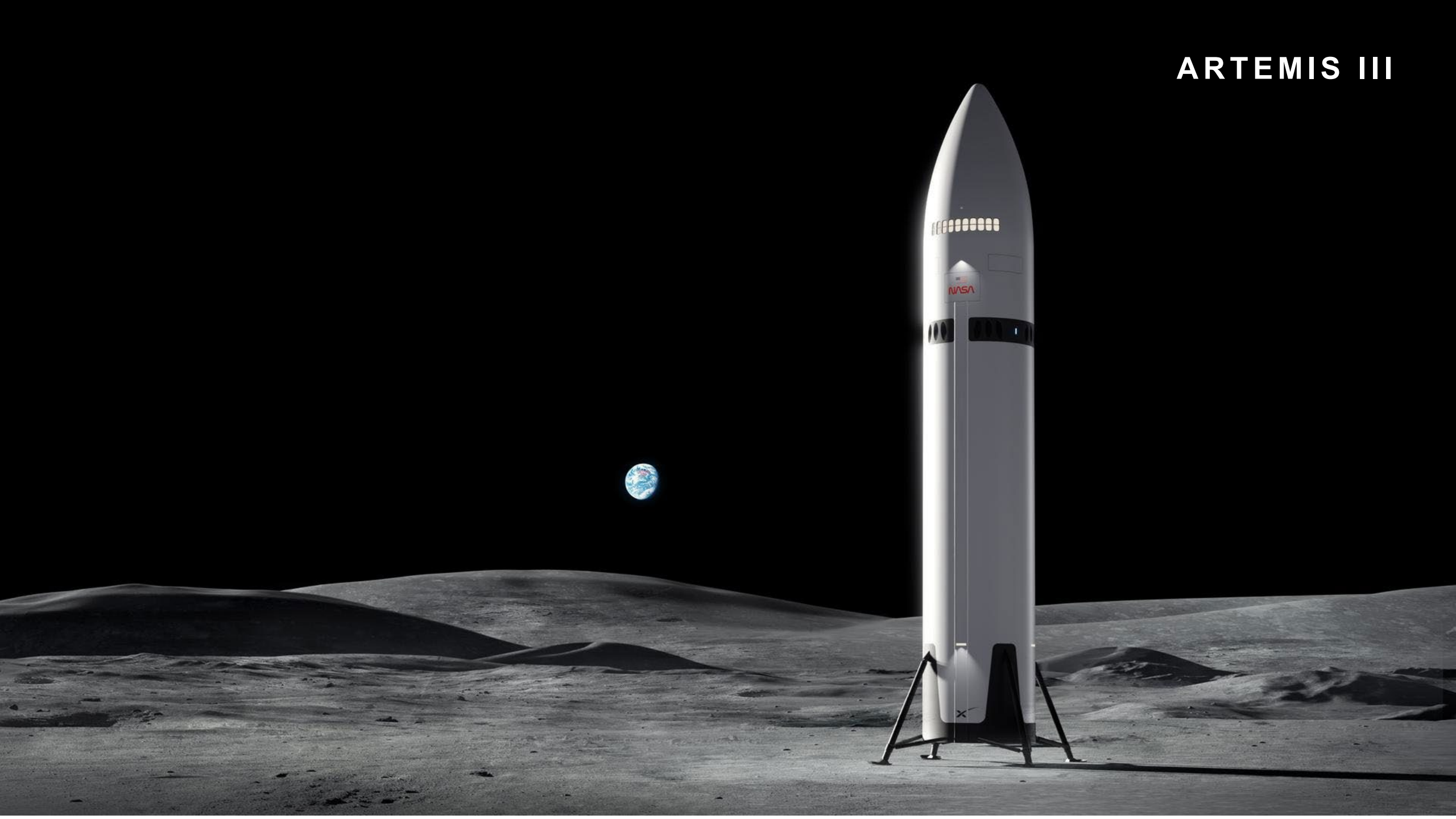

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NASA IWS 2025

The Human Research Program Investigators' Workshop (IWS) is the primary venue for reporting progress and results of research on safe, productive, and efficient human spaceflight. Join us!

January 28-31, 2025
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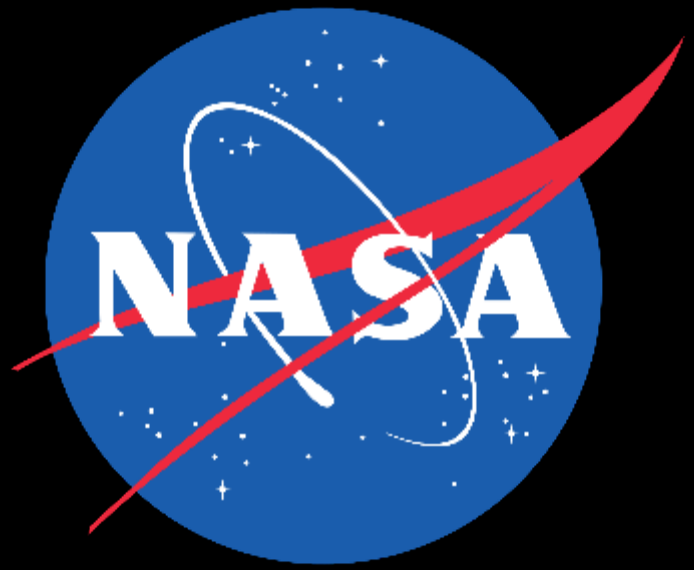
REGISTRATION OPEN
https://www.nasa.gov/hrp-iws-2025/



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