

Opportunity Title: High-Fidelity CFD and Mars Rotor Aeromechanics

Opportunity Reference Code: 0153-NPP-NOV26-ARC-Aero

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0153-NPP-NOV26-ARC-Aero

How to Apply All applications must be submitted in [Zintellect](#)

Please visit the NASA Postdoctoral Program website for application instructions and requirements: [How to Apply | NASA Postdoctoral Program \(oua.org\)](#).

A complete application to the NASA Postdoctoral Program includes:

1. Research proposal
2. Three letters of recommendation
3. Official doctoral transcript documents

Application Deadline 11/1/2026 6:00:59 PM Eastern Time Zone

Description About the [NASA Postdoctoral Program](#)

The [NASA Postdoctoral Program \(NPP\)](#) offers unique research opportunities to highly-talented scientists to engage in ongoing NASA research projects at a NASA Center, NASA Headquarters, or at a NASA-affiliated research institute. These one- to three-year fellowships are competitive and are designed to advance NASA's missions in space science, Earth science, aeronautics, space operations, exploration systems, and astrobiology.

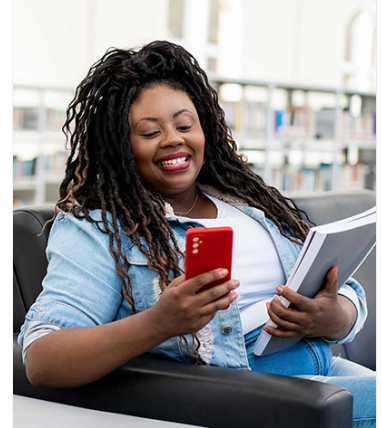
Description:

NASA Ames Research Center invites applications for a postdoctoral research position focused on comprehensive analysis and high-fidelity simulation/analysis of aerodynamic phenomena relevant to Mars rotorcraft and Mars rotorcraft performance. The successful candidate will contribute to ongoing research aimed at improving understanding of low-density, low-Reynolds-number, high-solidity rotor performance and aerodynamics through the use of comprehensive analysis, high-order computational fluid dynamics (CFD), and direct numerical simulation (DNS) tools.


The postdoctoral researcher will work with CAMRAD II, PyFR, OVERFLOW, and related solvers to perform design and simulations at relevant Mars conditions, support the design and assessment of high-solidity rotor concepts, and collaborate with a multidisciplinary team working on next-generation Mars aerial mobility technologies.

Responsibilities may include:

- Running CFD and DNS simulations using OVERFLOW and PyFR at Mars aerodynamic conditions
- Running comprehensive analysis simulations using CAMRAD II at Mars aerodynamic conditions



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- Post-processing and analysis of DNS, CFD, or comprehensive analysis datasets
- Geometry creation and mesh generation for simulations
- Validation of computational results against experimental data and previously generated datasets
- Supporting rotor design activities, including assessment of blade performance and flow physics
- Performing parameter studies or optimization within existing NASA frameworks
- Preparing technical reports and publications for internal review and peer-reviewed journals
- Presenting research findings at conferences and NASA program reviews

Field of Science: Aeronautics

Advisors:

Haley Cummings
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Applications with citizens from Designated Countries will not be accepted at this time, unless they are Legal Permanent Residents of the United States. A complete list of Designated Countries can be found at: <https://www.nasa.gov/oior/export-control>.

Eligibility is currently open to:

- U.S. Citizens;
- U.S. Lawful Permanent Residents (LPR);
- Foreign Nationals eligible for an Exchange Visitor J-1 visa status; and,
- Applicants for LPR, asylees, or refugees in the U.S. at the time of application with 1) a valid EAD card and 2) I-485 or I-589 forms in pending status

Questions about this opportunity? Please email npp@orau.org

Qualifications Required Qualifications:

- PhD in Aerospace Engineering, Mechanical Engineering, or a closely related field
- Demonstrated experience in DNS or LES of complex flows
- Strong background in CFD, turbulence, and numerical methods
- Proficiency in Python for simulation setup, automation, and data analysis
- Experience running PyFR on HPC systems
- Ability to work both independently and collaboratively within a research team

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Preferred Qualifications:

- Experience working in Mars aerodynamic regimes, including low-density, low-Reynolds, high transonic/low supersonic flows
- Understanding of unique flow physics associated with Mars rotorcraft and ultra-low density operation
- Familiarity with rotorcraft aerodynamics, comprehensive analysis tools, or high-order unstructured solvers
- Experience with GPU-accelerated CFD workflows

Point of Contact [Mikeala](#)

Eligibility Requirements

- **Degree:** Doctoral Degree.