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Opportunity Title: Extraterrestrial Drilling Studies
Opportunity Reference Code: 0129-NPP-MAR24-ARC-PlanetSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0129-NPP-MAR24-ARC-PlanetSci

How to Apply All applications must be submitted in Zintellect

Application Deadline 3/1/2024 6:00:59 PM Eastern Time Zone

Description **Description:**

Upcoming missions to the moon, Mars, and Titan plan to use drills to access subsurface materials. The PRIME 1 and VIPER missions, both planned for 2024 launch, will drill to depths of up to 1- meter on the moon. Studies are underway that help prepare for these missions by collecting and analyzing drill data produced by an engineering model of TRIDENT, the drill used on those missions. Drill performance can provide unique information about subsurface properties like material strength, state, depositional processes, water content and form. The candidate may participate in drill operations and research methods to interpret drill performance data in terms of subsurface properties. Approaches that involve data analysis, theoretical modeling and/or machine learning are encouraged. Research may also involve other methods to probe subsurface properties such as Ground Penetrating Radar and/ or active seismic profiling. Proposals are encouraged that include design and preparation of laboratory simulants for drilling experiments, identifying field analog locations, performing drilling experiments in them, and analyzing the resulting data. Projects that involve analysis of TRIDENT data from the lunar missions are also encouraged.

Field of Science: Planetary Sciences

Advisors:

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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/oiir/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

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Qualifications *The position requires a Ph.D. but the field of study could include planetary pcience, geology, geophysics, mechanical engineering, or a related field. Knowledge of soil and rock mechanics, drill design and engineering are also highly desirable. Programming and data analysis skills and computer modeling skills and languages including Python, C, and Machine Learning are highly desirable for the position.*

Eligibility Requirements

- **Degree:** Doctoral Degree.