

Opportunity Title: Studies of Comet 67P/Churyumov-Gerasimenko at millimeter and submillimeter wavelengths

Opportunity Reference Code: 0126-NPP-NOV23-JPL-PlanetSci

Organization National Aeronautics and Space Administration (NASA)

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Application Deadline 11/1/2023 6:00:59 PM Eastern Time Zone

Description The Microwave Instrument for the Rosetta Orbiter (MIRO) studies both the nucleus and coma of comet 67P/C-G. Flying on-board the Rosetta spacecraft, we have been observing the comet at wavelengths of 0.5 and 1.6 millimeters since May 2014, with end-of-mission anticipated in September 2016. Data analysis will continue for many years to come. While open to any area of research applicable to MIRO data (observational or model-based), we are particularly interested in candidates proposing to use our spectroscopic data to study the coma. A brief description of our instrument and science is given below. For details see Gulkis et al. 2015 (Science 347), Biver et al. 2015 (A&A Rosetta special issue in press), or Schloerb et al. 2015 (A&A Rosetta special issue in press). The successful candidate will work at JPL with the instrument PI and members of the MIRO science team. Collaborations with other Rosetta instruments are encouraged. MIRO makes broadband, continuum measurements at wavelengths of 0.5 and 1.6 mm which are used to study the thermal and electrical properties of the nucleus sub-surface (typically probing depths from ~1 mm to a few cm). This information is used to infer the composition and density as a function of location, depth, and time. The continuum channels are also used to study dust in the coma. In addition to its continuum channels, MIRO has a high-resolution spectrometer, working at wavelengths near 0.5 mm (frequencies near 560 GHz) that observes 6 molecules in the coma: H₂O, H₂-17O, H₂-18O, CH₃OH, NH₃, and CO. From our measurements, we infer the abundance, velocity, and temperature of those gases. Being sensitive to both the nucleus and coma allows MIRO to study them as a coupled system, and see how they each evolve over time.

Location:

Jet Propulsion Laboratory
Pasadena, California

Field of Science: Planetary Science

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:



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- 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

Eligibility Requirements

- **Degree:** Doctoral Degree.