

Opportunity Title: Integrated radiometric receivers

Opportunity Reference Code: 0145-NPP-NOV23-JPL-EarthSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0145-NPP-NOV23-JPL-EarthSci

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

Description Sounding of atmospheric humidity is key component of atmospheric science as water vapor transports large quantities of energy thru evaporation and condensation. This sounding can be achieved at the flanks of 183 GHz water vapor molecule resonance frequency. Microwave humidity sounders have been shown to have the largest impact on weather forecasts of all the space based instruments. Integration of radiometer functions on compound and silicon semiconductors will reduce the mass, power and size of the humidity sounders to enable arraying of large numbers of receivers for interferometric and focal plane arrays. These can be used in many types of radiometer instruments from large GeoStationary systems to LEO CubeSat scale systems. Integration of receiver functions will be achieved by designing low noise amplifiers, mixers, LO's and IF and digitization circuitry on a single or multiple technologies. At 183 GHz water vapor sounding frequencies InP technology would provide the lowest noise temperature, however, integrated receivers were demonstrated at these frequencies in CMOS technology. Optimizing these receiver functions for integration into one hybrid multichip module (MCM) would provide the lowest noise, mass and power system.

Location:

Jet Propulsion Laboratory
Pasadena, California

Field of Science:Earth Science

Advisors:

Pekka P. Kangaslahti
Pekka.P.Kangaslahti@jpl.nasa.gov
818-393-4492

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



Whether you are just starting your career or already at a senior level, ORAU offers internships, fellowships, research opportunities, and contract positions that can provide you with invaluable experience. Download the ORAU Pathfinder mobile app and find the right opportunity to propel you along your career path!

Visit ORAU Pathfinder [↗](#)



Opportunity Title: Integrated radiometric receivers

Opportunity Reference Code: 0145-NPP-NOV23-JPL-EarthSci

Eligibility Requirements • **Degree:** Doctoral Degree.