



Advanced Net Flux Radiometer Focal Plane Assembly for Ice Giants

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Target: Our novel Net Flux Radiometer (NFR) concept responds to the science objectives of a future probe mission to either (a) Uranus or (b) Neptune, but is also applicable to missions to other planets with atmospheres.

Science:

Our NFR onboard a probe descending deep into the atmosphere of either Ice Giant will greatly contribute to answering:

- What are the altitudes/pressures and compositions of the cloud layers?
- How do the cloud layers interact with solar visible and planetary thermal radiation to influence the atmospheric energy balance?
- How does the energy balance contribute to atmospheric dynamics?

With our NFR we will determine:

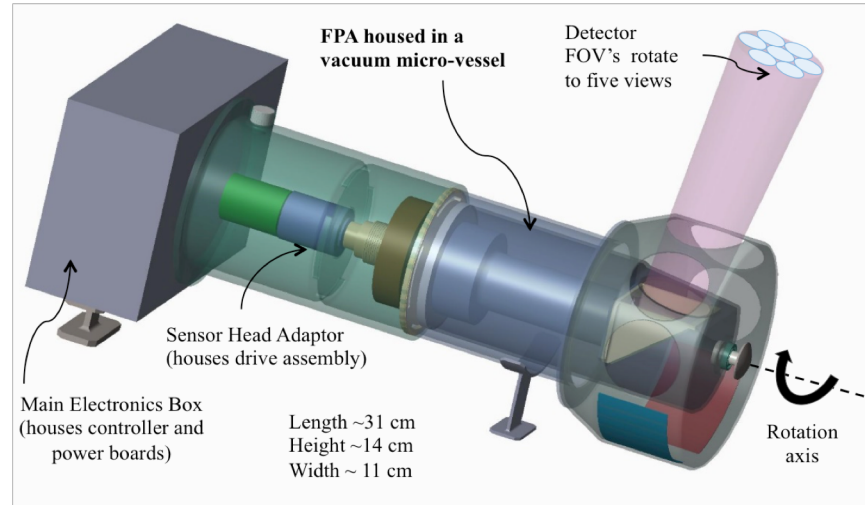
- the planet's atmospheric heat balance
- the planet's tropospheric 3-D flow

Objectives:

In this PICASSO effort we are concentrating on the technology maturation of the Focal Plane Assembly (FPA) housed in a vacuum micro-vessel.

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Our NFR will be capable of measuring energy flux in seven spectral bands (channels) covering the 0.2-300 μm spectral range, each with a 5° FOV projected into the sky.

Key Milestones July-December 2018:

- Kick-off Meeting (July 2018 - James Gaier agreement)
- Requirements and specifications complete (Aug 2018)
- Detector, Winston Cone, Fold mirror, FEE-MCD ASIC and vacuum micro-vessel design complete (Oct 2018)
- Manufacturing contract placed with IR labs (Nov 2018)
- Filter set manufacture and radiative transfer model agreement in place with Oxford University (Nov 2018)

From kick off to date: TRL (2) to (2)