



# Next-Generation Cold Object Radiometer (COBRA)

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**Target:** Uranus & Neptune, icy satellites, the Moon, or any cold targets in the solar system.

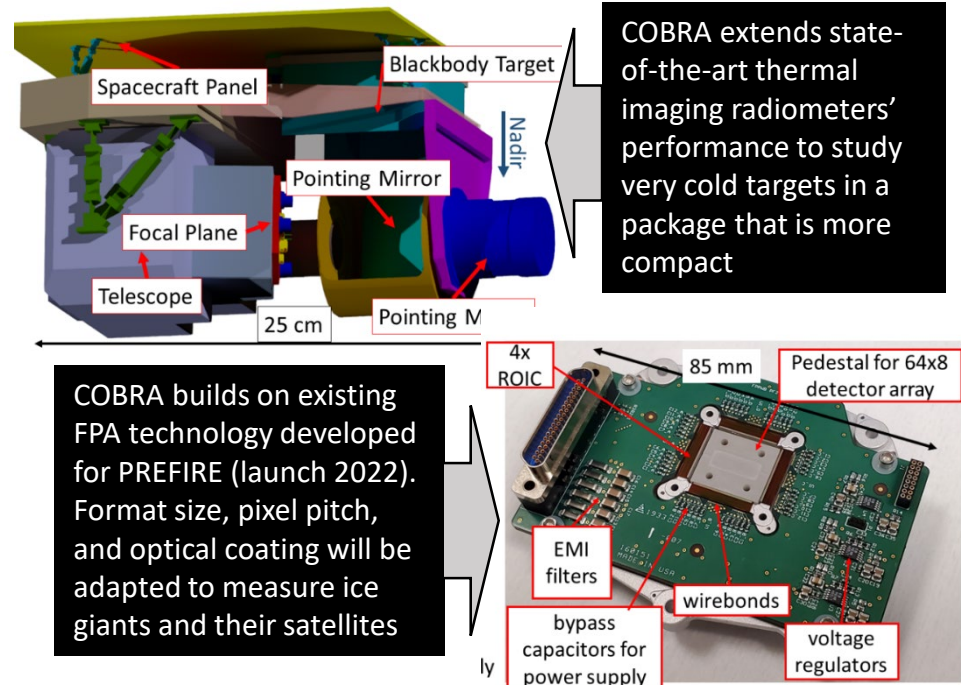
## Science:

- Radiative balance of planetary bodies with an emphasis on ice giants (e.g. far-infrared thermal emission studies beyond 50  $\mu\text{m}$ ).
- Atmospheric structure of the ice giants through nadir sounding in the far-infrared.
- Thermal inertia and thermal anomaly measurements of icy satellites and the Moon.

## Objectives:

- Develop a thermal imaging radiometer (TIR) called COBRA with cutting-edge technology to measure targets that reach below 60 K (i.e. ice giants, icy satellites, Moon's poles).
- Key technologies include:
- Adaptation of existing PREFIRE (launch 2022) **focal plane array** for COBRA science.
- Development of **filter block** with suite of new, narrow far infrared mesh filters to perform high priority science on icy giants and their satellites.
- Execution of **novel optical design** with intermediate focus to accommodate the filter block.

**Cols:** Dr. Catherine Elders, Dr. Byeongho Eom, Dr. Armin Kleinboehl, Dr. Dean Johnson, Dr. William Johnson, Dr. Dan Preston, Dr. Daniel Wenkert (All JPL)



## Key Milestones:

- **YEAR 1:**
  - test prototype optics (12 mo.)
  - EM focal plane design, fab, test (12 mo.)
- **YEAR 2:**
  - Complete filter block (18 mo.)
  - Test radiometric performance of COBRA (24 mo.)

**TRL 4 to 6**