PRIMA

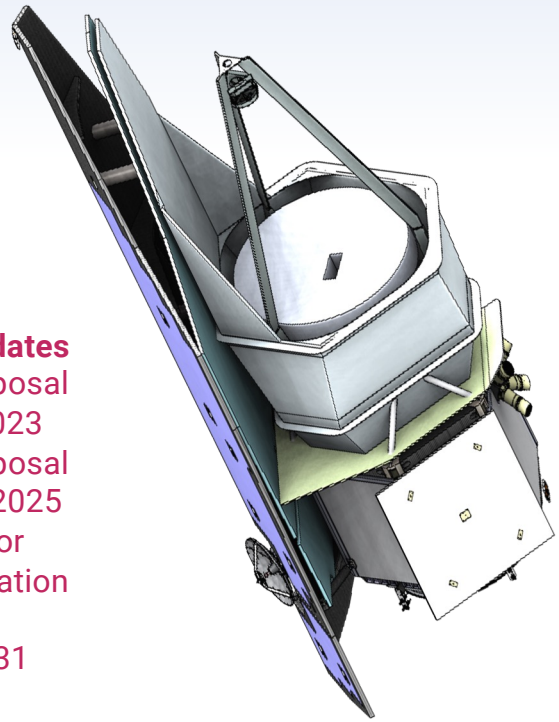
Welcome to the community workshop!

Jason Glenn, Principal Investigator, GSFC
Matt Bradford, Acting Deputy PI and Project Scientist, JPL
Margaret Meixner, Community Outreach, JPL
Alex Pope, Science Lead, UMass

March 2023
https://prima.ipac.caltech.edu/

Payload	
Instruments	
Telescope	2.0 m all-aluminum on-axis telescope, cooled to 4.5 K
Spectrometer	4 gratings, small-volume KIDs, 100 mK, 24-240 μm, R = 130
FTS	High resolution mode: R = 4,400 @ 112 μm
Imager	PRIMAGER - 100mK, 25-264 μm, narrow short-wave bands
Active / Passive Thermal	
Active	Cryocooler & ADR for the focal planes
Passive	V-groove radiators & sun-shade

PRIMA answers the Astro2020's recommendation and NASA's call for a far-infrared probe with a powerful suite of instrumentation to enable a broad range of new science.



Expected key dates

1. Step 1 proposal due Oct 2023
2. Step 2 proposal due early 2025
3. Selection for implementation late 2025
4. Launch 2031

How it all works together

Broadband spectroscopy and fast spectral mapping →

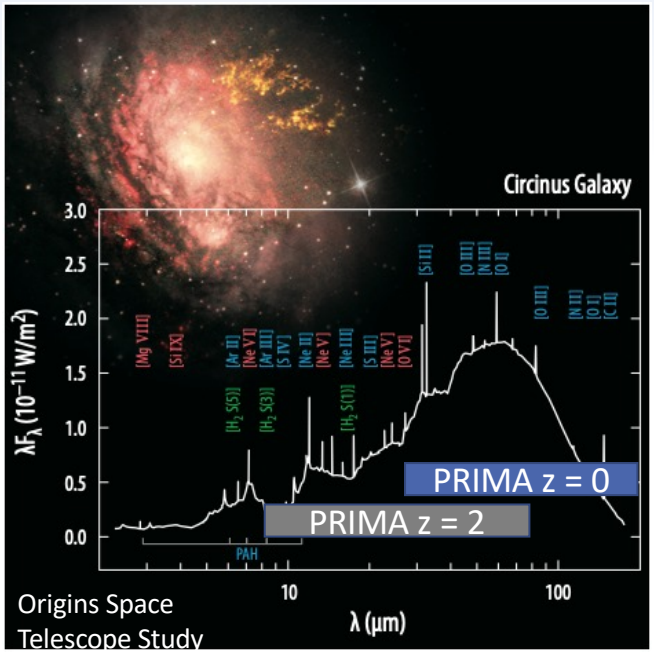
High resolution spectroscopy of point sources →

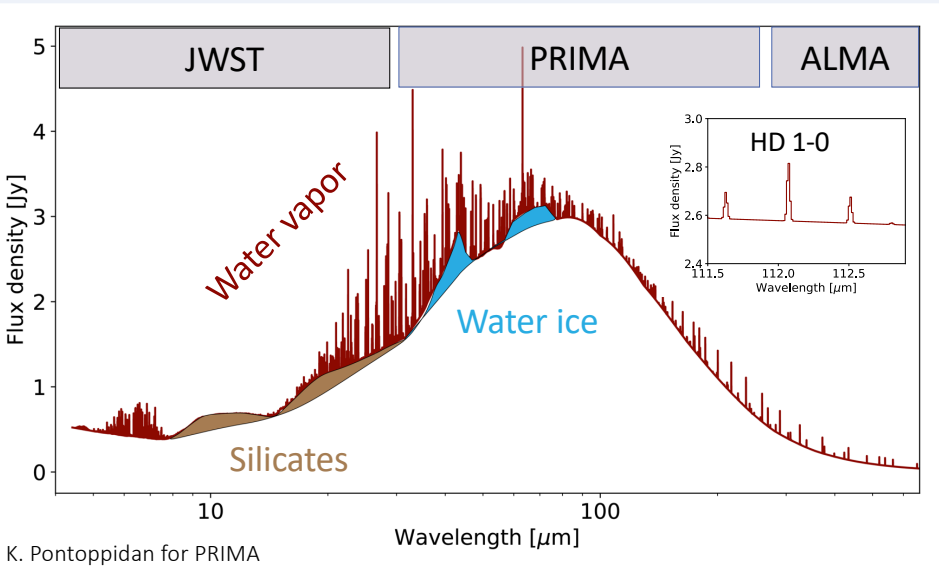
Fast R ~ 10 imaging ($25 \leq \lambda \leq 80\ \mu$m) and broadband polarimetry ($80 \leq \lambda \leq 265\ \mu m$) →

Instruments		
Spectrometer	4 gratings, small-volume KIDs, 100 mK, 24-240 μm, R = 130	← Matt Bradford's talk
FTS	High resolution mode: R = 4,400 @ 112 μm	
Imager	PRIMAGER - 100mK, 25-265 μm, narrow short-wave bands	← Laure Ciesla's talk

SCIENCE

Spread over its 5-year lifespan, PRIMA will have an ambitious science program comprised of PI-science surveys (≤30%) and community-defined Guest Observer key projects and pointed observations (totaling ≥70%).





K. Pontoppidan for PRIMA

PRIMA will occupy the wavelength gap between JWST and ALMA and have sensitivities and observing speeds orders of magnitude faster than previous far-infrared observatories.

IMPLEMENTATION PARTNERSHIPS

Your guest observer interface to PRIMA →

Institution	Contribution
JPL	Proposal lead; payload optical, thermal, mechanical; detectors
Goddard Space Flight Center	Sub-Kelvin cryogenics; Fourier Transform module, focal plane optics
Infrared Processing and Analysis Center – IPAC	Data processing and archive; proposal interface to community
Laboratoire D'Astrophysique de Marseille – LAM	PRIMAger
Max Planck Institut für Astronomie – MPIA	Beam-steering mirrors
Netherlands Institute for Space Research	Detectors
Cardiff University	Quasioptical filtering
Ball Aerospace, Inc.	Spacecraft

WORKSHOP GOALS

1. Inform the community about the status and planned capabilities of PRIMA
2. Learn what science the community would like to do with PRIMA
3. Facilitate generation of Guest Observer science cases culminating in 2 – 3 page papers
4. Publish science book on astro-ph with your authored contributions (in the early fall)