Following the Rise of Dust and Metals with PRIMA

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Abstract

The far-infrared holds unique power for following the evolution of gas, dust, and metals across cosmic time. I'll give an overview of PRIMA - the PRobe far-Infrared Mission for Astrophysics - a NASA-led, internationally-backed probe-class far-infrared mission concept for the 2030s. PRIMA operates in the currently untapped > 10x wavelength gap between JWST and ALMA, and its cold architecture and novel detector technology combine to enable radical gains in sensitivity, with survey speeds up to 10,000 faster than previous FIR facilities. I'll describe how PRIMA's powerful instrument suite will be used to investigate the origins and subsequent processing of dust grains today, track the evolving relationship between dust and metals over cosmic time, and even reach back to the earliest appearance of hydrocarbon material in the 1st Gyr of the Universe.
With 75% of its time dedicated to general observers, PRIMA is a platform for the entire community. A diverse suite of community science cases is already forming, and I'll let you know how you can get involved.

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