

## Far-IR/Submm Interferometry: A Space Frontier

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NASA is studying space-based far-IR/submillimeter interferometry, a prospect that has received considerable support from the astronomical community. We describe concepts for the *Space Infrared Interferometry Trailblazer* (SPIRIT) and the *Submillimeter Probe of the Evolution of Cosmic Structure* (SPECS). Both are imaging and spectral Michelson interferometers operating in the range  $\sim 40 - 500 \mu\text{m}$ , with cryogenic optical components and arrays of sensitive detectors, and are sky background limited. SPIRIT, which could be launched in a decade, is built on a deployable boom and has a maximum baseline of  $\sim 30$  m, providing arcsecond resolution in the far-IR. SPECS uses formation flying to attain baseline lengths up to  $\sim 1$  km.

SPIRIT and SPECS would give us access to many important cooling and diagnostic spectral lines and to the bulk of the thermal emission from dust, and make observations complementary to those obtained with ALMA and NGST. Together, NGST, SPECS and ALMA would provide virtually continuous spectral coverage at tens of milliarcsecond resolution from visible to millimeter wavelengths.

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