What is SPICE and how does it work?

What makes SPICE unique?

How does SPICE work?

SPICE is a spatio-spectral interferometer

Wavelength range 25-400 µm in four octave-wide bands

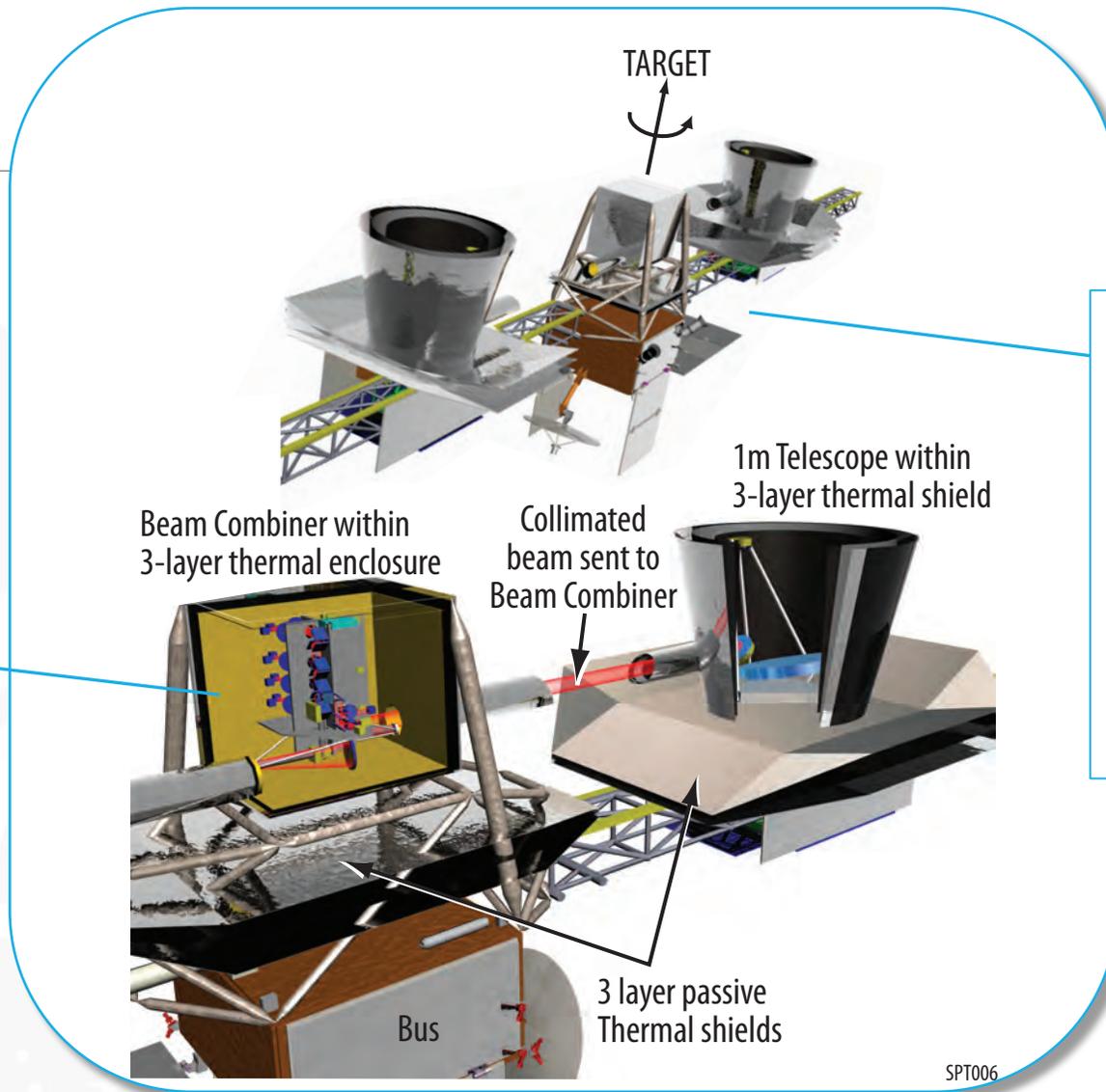SPICE rotates around the line-of-sight vector and the telescope separation is adjustable.

Beam-combining instrument (Fourier Transform Spectrometer)

Operational modes:
- Dense or sparse *u-v* plane coverage
- Short optical delay scan for SED, long for R > 3000 spectroscopy over 1'x 1' FoV

Sun-Earth L2 orbit

SPICE was studied thoroughly as SPIRIT in 2004 (3 point-designs, each with integrated analysis)

TARGET

Maximum baseline 36 m

(telescope fixed at end of retractable boom, not as shown)

1m Telescope within 3-layer thermal shield

Beam Combiner within 3-layer thermal enclosure

Collimated beam sent to Beam Combiner
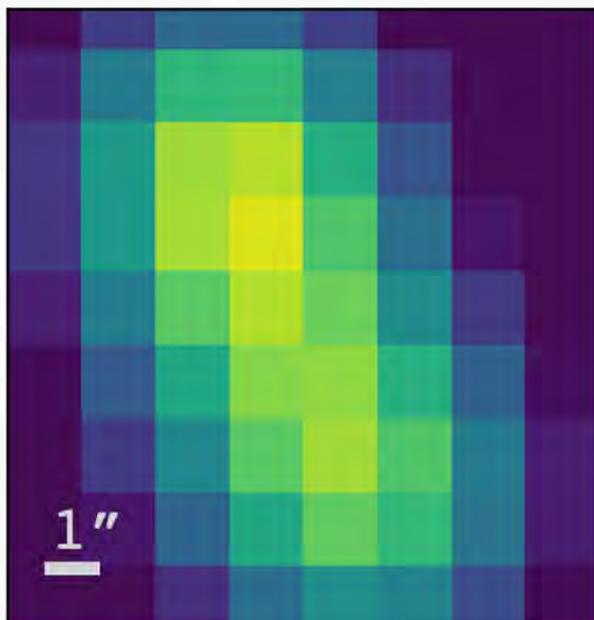
3 layer passive Thermal shields

Bus

SPT006

What makes SPICE unique?

❑ SPICE addresses the Decadal goals for a Far-IR Probe as no other mission can: with **image resolution sufficient to resolve the objects of interest and penetrate extragalactic confusion**, and with **a spectrum in every resolution element**.

❑ A **single science instrument** provides these capabilities
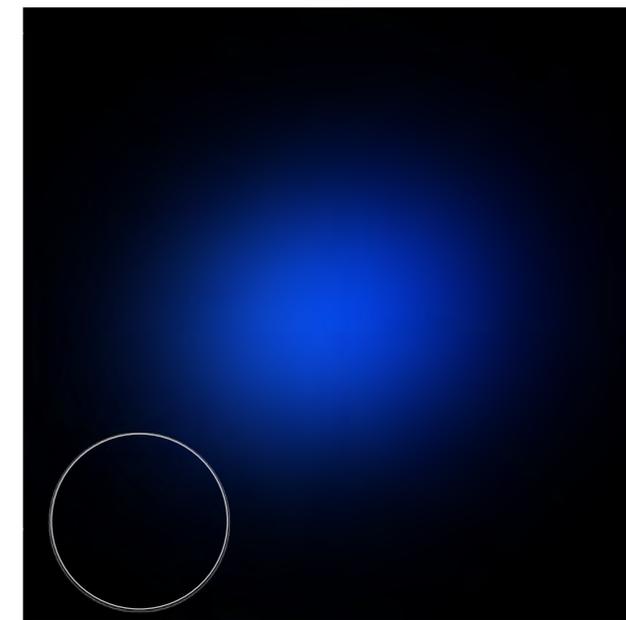
The past with *Herschel*

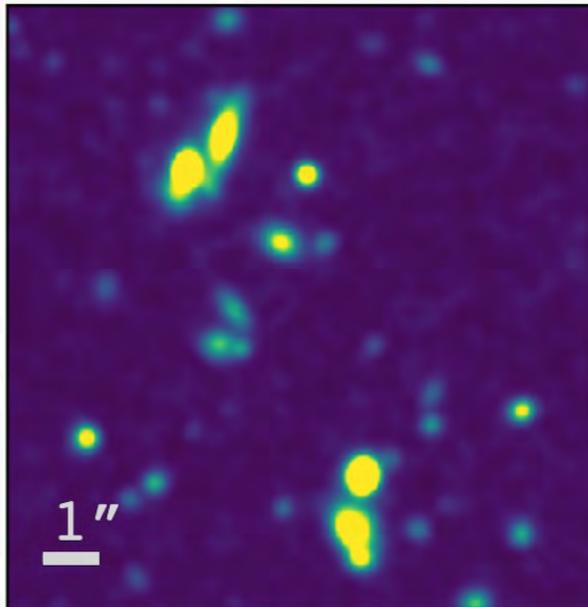Extragalactic deep field

Protoplanetary disk

Debris disk

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The future with *SPICE*

Extragalactic deep field

Protoplanetary disk

Debris disk