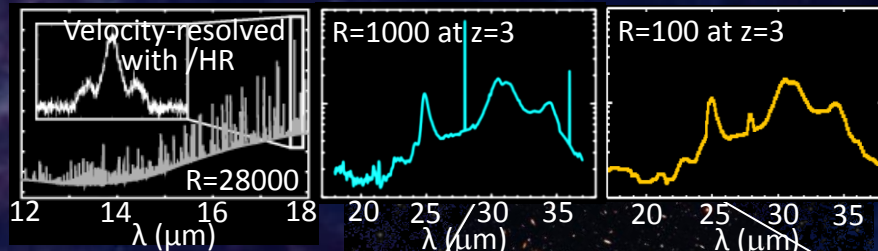
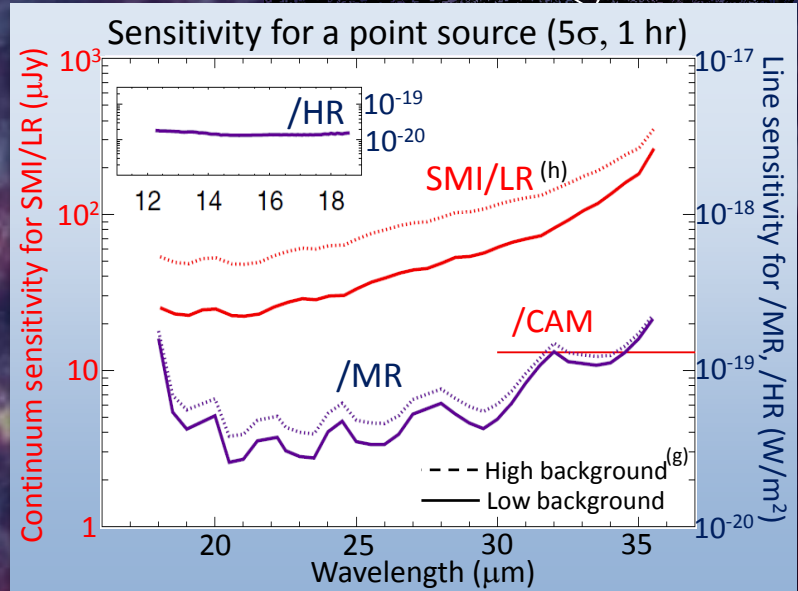


SPICA / SMI Fact Sheet

SPICA Mid-infrared Instrument (SMI) covers the wavelength range of 12–36 μm with four channels: spectroscopy (SMI/LR, /MR, /HR) and imaging (/CAM).



| Parameter | SMI /LR | /CAM Slit viewer for SMI /LR | /MR | /HR |
|--|---------------------------------------|------------------------------------|---|------------------------|
| Band centre - μm | 27 | 34 | 27 | 15 |
| Wavelength - μm | 17 – 36 | 34 | 18 – 36 | 12 – 18 ^(a) |
| Spectral resolution R (diffuse source) | 50 – 120 ^(b) (20 – 110) | 5 | 1300 – 2300 ^(b) (1100 – 1400) | 28000 ^(c) |
| Field of view | 600" x 3.7" 4 slits | 600" x 720" | 60" x 3.7" 1 slit | 4" x 1.7" 1 slit |
| Band centre FWHM | 2.7" | 3.5" | 2.7" | 2" |
| Pixel scale | 0.7" x 0.7" | 0.7" x 0.7" | 0.7" | 0.5" |
| Detector 1K x 1K | Si:Sb | Si:Sb | Si:Sb | Si:As |
| Point source sensitivity (5 σ /1 hr) | | | | |
| Continuum - μJy | 50 | 13 | 400 | 1500 |
| Line - 10^{-20} W/m ² ^(d) | 8 | | 4 | 1.5 |
| Survey speed - arcmin ² /hr ^(e) | ~16 | ~5900 | ~1.5 | |
| Diffuse source sensitivity (5 σ /1 hr) ^(f) | | | | |
| Continuum - MJy/sr | 0.05 | 0.05 | | |
| Line - 10^{-10} W/m ² /sr | | | 1 | 1.5 |
| Saturation limit - Jy | ~20 | ~1 | ~1000 | ~20000 |



(a) continuous coverage up to 17.3 μm + partial coverage for H₂O 17.77, 18.66 μm .

(b) $\lambda/\delta\lambda = 120$ (SMI/LR) and 1300 (/MR) at $\lambda = 36$ μm .

(c) designed for $\lambda 20$ μm diffraction limited PSF.

(d) sensitivity for an unresolved line.

(e) survey speed for the 5 σ detection of a point source with the continuum flux of 100 μJy for SMI/LR at $\lambda = 30$ μm (/CAM at 34 μm) and the line flux of 3×10^{-19} W/m² for /MR at $\lambda = 28$ μm , both in the low background case (see the right-hand figure).

(f) sensitivity for a diffuse source in a 4" x 4" (SMI/LR, /MR) or 2" x 2" area (/HR).

(g) background levels are assumed to be 80 MJy/sr (High) and 15 MJy/sr (Low) at 25 μm .

(h) continuum sensitivity rescaled with $R = 50$.