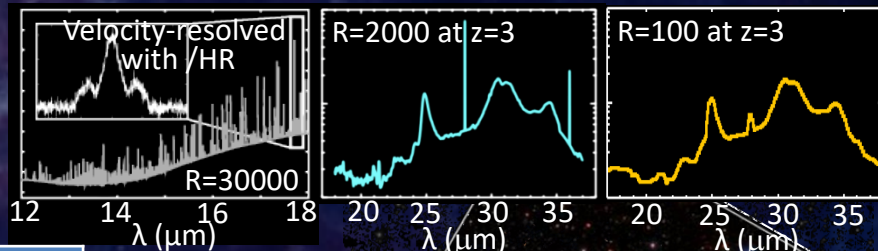
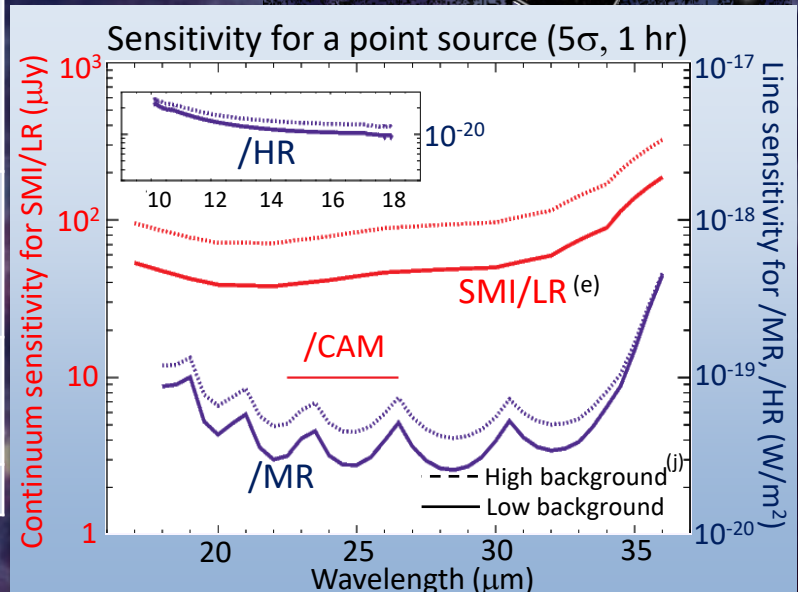
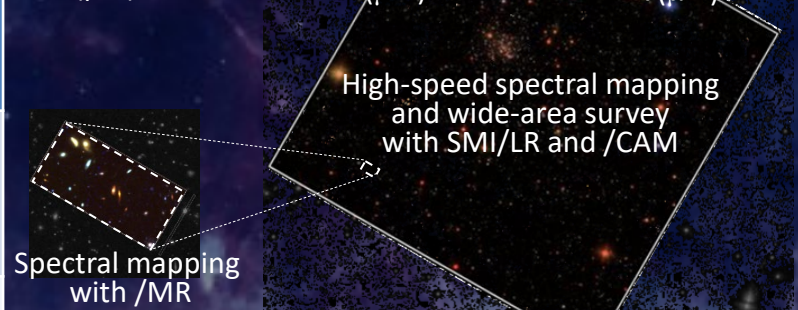


SPICA / SMI Fact Sheet

SPICA Mid-infrared Instrument (SMI) covers the wavelength range of 10–36 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	24	27	15
Wavelength - μm	17 – 36	24	18 – 36	10 – 18 (a)
Spectral resolution R (diffuse source)	60– 160 (b) (20 – 100)	5	1400 – 2600 (b) (800)	29000 (c)
Field of view	900" x 5.1" 4 slits	900" x 1080"	90" x 5.1" 1 slit	6" x 2.4" 1 slit
Band centre FWHM	4.0"	3.3"	4.0"	3"
Pixel scale	1.0" x 1.0"	1.0" x 1.0"	1.0"	1.0"
Detector 1K x 1K	Si:Sb	Si:As	Si:Sb	Si:As
Point source sensitivity (5 σ /1 hr) ^(d)				
Continuum - μJy	47 (e)	10	400 (e)	1500 (e)
Line - 10^{-20} W/m ² (f)	8		3.8	1.1
Survey speed - arcmin ² /hr (g)	~20	~29000	~3.0	
Diffuse source sensitivity (5 σ /1 hr) ^{(d)(h)}				
Continuum - MJy/sr	0.07	0.03		
Line - 10^{-10} W/m ² /sr			0.5	0.8
Saturation limit – Jy	~40	~4.0	~2000	~20000



(a) continuous coverage up to 17.7 μm + partial coverage for H₂O 17.77 μm .

(b) $\lambda/\delta\lambda = 160$ (SMI/LR) and 1400 (/MR) at $\lambda = 36 \mu\text{m}$.

(c) designed for $\lambda 20 \mu\text{m}$ diffraction limited PSF.

(d) sensitivity estimated with ramp curve sampling of 0.5 Hz sampling for /LR, /MR and of 1Hz sampling for /CAM and /HR.

(e) continuum sensitivity rescaled with $R = 50$, $R = 1300$, and $R = 25000$ for SMI/LR, /MR and /HR, respectively.

(f) sensitivity for an unresolved line.

(g) survey speed for the 5 σ detection of a point source with the continuum flux of 100 μJy for SMI/LR at $\lambda = 30 \mu\text{m}$ (/CAM at 24 μm) and the line flux of 3×10^{-19} W/m² for /MR at $\lambda = 28 \mu\text{m}$, both in the low background case with overheads of readout time included (32 sec/frame for SMI/LR and /CAM due to Fowler-16 sampling).

(h) sensitivity for a diffuse source in a 6" x 6" (SMI/LR, /MR) or 3" x 3" area (/HR).

(i) background levels are assumed to be 70 MJy/sr (High) and 19 MJy/sr (Low) at 27 μm .