



# SPICA/SAFARI Fact Sheet

## SAFARI Overview

- Four band *grating spectrometer*
- Continuous spectroscopic capability from 34-230  $\mu\text{m}$

Parameter	Waveband				
	SW	MW	LW	LLW	
<b>Band centre / <math>\mu\text{m}</math></b>	45	72	115	185	
<b>Wavelength range / <math>\mu\text{m}</math></b>	34-56	54-89	87-143	140-230	
<b>Band centre beam FWHM</b>	4.5"	7.2"	12"	19"	
<b>Point source spectroscopy (5<math>\sigma</math>-1hr)</b>					
R~300	<b>Limiting flux / <math>\times 10^{-20} \text{ W m}^{-2}</math></b>	7.2	6.6	6.6	8.2
R	<b>Limiting flux density / mJy</b>	0.31	0.45	0.72	1.44
High R	<b>Limiting flux / <math>\times 10^{-20} \text{ W m}^{-2}</math></b>	13	13	13	15
High R	<b>Limiting flux density / mJy</b>	18	17	17	19
<b>Mapping spectroscopy* (5<math>\sigma</math>-1hr)</b>					
R~300	<b>Limiting flux / <math>\times 10^{-20} \text{ W m}^{-2}</math></b>	84	49	30	23
R	<b>Limiting flux density / mJy</b>	3.6	3.3	3.3	4.1
High R	<b>Limiting flux / <math>\times 10^{-20} \text{ W m}^{-2}</math></b>	189	113	73	51
High R	<b>Limiting flux density / mJy</b>	253	151	97	67
<b>Photometric mapping* (5<math>\sigma</math>-1hr)</b>					
	<b>Limiting flux density / <math>\mu\text{Jy}</math></b>	209	192	194	239
	<b>Confusion limit (5<math>\sigma</math>)</b>	15 $\mu\text{Jy}$	200 $\mu\text{Jy}$	2 mJy	10 mJy

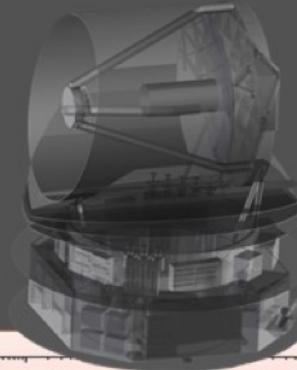


Sensitivities based on detector NEP  $2 \times 10^{-19} \text{ W}/\sqrt{\text{Hz}}$

\* Mapping performance is for a reference area of 1 arcmin $^2$

## SPICA Mission

- ESA/JAXA collaboration
- Telescope effective area 4.6 m $^2$
- Primary mirror temperature 8K
- Goal mission lifetime – 5 years



System performance v.s. target flux density, relative to the background limited case

- The sensitivity decrease is due to the increased photon noise from the target source
- Data given up to the instrument saturation limits for each band (31, 51 and 87 Jy for the SW, MW and LW bands respectively).

