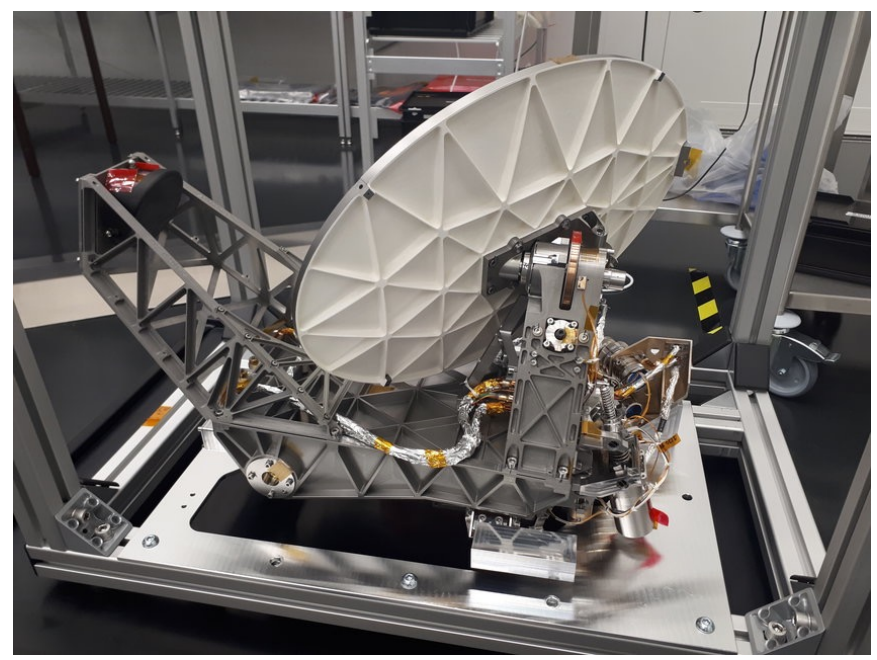


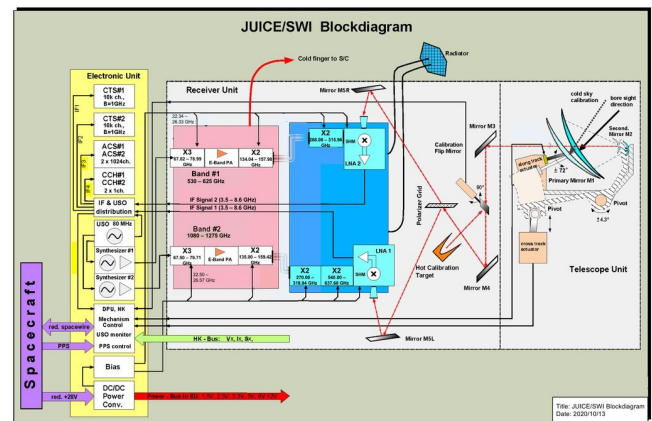
The Submillimetre Wave Instrument (SWI) will investigate the Galilean moons of the giant planet Jupiter, the chemistry, meteorology, and structure of Jupiter's middle atmosphere as well as atmospheric and magnetospheric coupling processes.

By characterising Jupiter as a planet and possible habitat, and the investigation of more recent active areas within Europa's ice crust, SWI will provide data for further investigations of habitability on the Galilean moons Ganymede, Europa and Callisto.

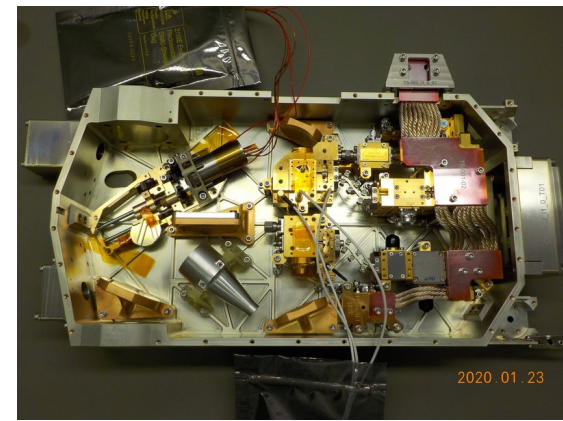
Furthermore, the instrument will investigate the Jupiter system as an archetype of a gas giant planet and characterise Jupiter's atmosphere as well as its rings and moons.



Telescope and Receiver Unit © MPS



Blockdiagram © MPS



Receiver Unit © MPS

Submm wave instrument detection limits

(similar limits for isotopologues containing C, S and N)

Molecule	Column (m ⁻²)	Molecule	Column (m ⁻²)
H ₂ O	5 × 10 ¹⁴	H ₂ O+	3 × 10 ¹⁴
H ₂ ¹⁸ O	5 × 10 ¹⁴	SO	8 × 10 ¹⁵
H ₂ ¹⁷ O	5 × 10 ¹⁴	SO ₂	2 × 10 ¹⁶
HDO	5 × 10 ¹⁴	NaCl	1 × 10 ¹⁴
H ₂ O ₂	5 × 10 ¹⁵	KCl	2 × 10 ¹⁴
O ₂	1 × 10 ¹⁹	MgCl	3 × 10 ¹⁵
CH ₃ OH	4 × 10 ¹⁵	H ₂ CO	2 × 10 ¹⁶
CO	2 × 10 ¹⁷	NaOH	1 × 10 ¹⁴
PH ₃	2 × 10 ¹⁶	MgO	1 × 10 ¹⁴
HCN	2 × 10 ¹⁵	CH ₃ CN	2 × 10 ¹⁵
NH ₃	1 × 10 ¹⁵	PO	4 × 10 ¹⁴

SWI detection limits for different molecules

SWI is a submillimetre wave heterodyne spectrometer, consisting of two channels that measure spectra in the wavelengths ranges around 520 μm (530 GHz – 625 GHz) and 250 μm (1080 – 1275 GHz) with a spectral resolution of 10⁷.