Jupiter observations at infrared wavelengths by Juno.

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The Jovian InfraRed Auroral Mapper (JIRAM) [1] on board the Juno [2,3] spacecraft, is equipped with an infrared camera and a spectrometer working in the spectral range 2-5 μm. JIRAM was built to study the infrared aurora of Jupiter and to map the planet's atmosphere in the 5 μm spectral region. Its spectroscopic observations in the 2-5 μm range can be used for studying atmospheric dynamics, clouds and measuring the abundance of some chemical species that have importance in the atmospheric chemistry, microphysics and dynamics like water, ammonia and phosphine and for the formation of the infrared aurora like the ion H_3^+.

The instrument operated during most of the Jupiter flybys since the starting of the mission in August 2016 performing several observations of the of the planet from the equator to poles. Unprecedented views the polar atmospheric structures and auroras have been observed for the first time thanks to the peculiarity of the Juno mission strategy. We present a survey of the most significant observations done by the instrument since the start of the mission.

[1] Adriani A. et al., JIRAM, the Jovian Infrared Auroral Mapper. Space Sci. Rew., DOI 10.1007/s11214-014-0094-y, 2014.
[2] Bolton S.J. et al., Jupiter's interior and deep atmosphere: The initial pole-to-pole passes with the Juno spacecraft. Science DOI: 10.1126/science.aal2108, 2017.
[3] Connerney J. E.P. et al., Jupiter's magnetosphere and aurorae observed by the Juno spacecraft during its first polar orbits. Science, DOI: 10.1126/science.aam5928, 2017.