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The thermal plasma environment of Jupiter and its moons - revisited

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Abstract

Jupiter and its moons form the most diverse plasma laboratory in the solar system. Because of its chemical composition and energetic range measuring and understanding the dynamics of the Jovian plasma has been a challenge for all missions visiting the planet and its moons. In this paper we first review the most important observations made by previous missions and show specifically some new results on the statistical properties of the thermal plasma observations by the Galileo mission. We discuss the instrumental limitations of previous missions and the prospects for the upcoming ESA Jupiter mission - currently called JUICE. We also discuss observations relevant for the plasma interaction with the Jovian moons Callisto, Europa and Ganymede.