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An optimum opportunity for interstellar dust measurements by the JUICE mission

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Abstract

The JUpiter ICy moons Explorer (JUICE) is an ESA L-class mission concept designed to explore the Galilean satellites of the Jovian system. Although the mission science goals do not include any astronomical observations, we find by modeling the Interstellar Dust (ISD) trajectories that the planned period of the JUICE mission is optimal for in-situ observations of Interstellar Dust, due to highly increased flux levels at that time at the orbit of Jupiter. If JUICE would carry a dust detector, this could lead to exclusive high-resolution mass spectra of ISD grains. Such compositional information on the ISD grains is important for understanding the origins of of solar/planetary systems, and therefore could represent a valuable addition to the core JUICE mission science.