

The JUICE mission to the Jupiter System

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The JUICE mission is the first large-class mission under the ESA Cosmic Vision Programme. The spacecraft was successfully launched on April 14 2023 and the insertion into Jupiter's orbit is foreseen in July 2031 after several fly-bys, including Earth, Moon, and Venus. JUICE will provide a comprehensive survey of the Jupiter system, with particular emphasis on the three ocean worlds Ganymede, Europa, and Callisto. Europa and Ganymede are considered special cases in terms of Solar System habitability, a key question of the Cosmic Vision Program. The Galilean satellites exhibit extreme diversity today in a relatively short distance, reflecting the complexity of the processes along their evolution. Ganymede will be investigated with 12 flybys followed by a 9-month orbital phase starting in December 2034 and at this point, JUICE will be the first mission with a spacecraft orbiting another satellite besides our Moon. Europa will be investigated with two flybys, Callisto will be studied in detail during 21 flybys, and additional remotely sensed information on Io, the smaller moons, will complete the satellite tour. Finally, during the nominal duration of the Jovian tour (about 3.5 year), the mission will characterize the Jupiter's atmosphere, its aurorae and magnetosphere, along their interaction with the Galilean satellites. Among the key instruments on board, MAJIS (Moons And Jupiter Imaging Spectrometer), an hyperspectral imager operating from 0.50 μm to 5.54 μm , will perform observations to characterize the geology, the surface composition and the exospheres of satellites as well as the Jovian atmosphere and aurorae.

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Sole e Sistema solare

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