

LAPLACE

A mission to Europa and the Jupiter System for ESA's Cosmic Vision Programme

Pierre-Simon Laplace, European scientist (1749-1827) was a pioneer in the study of the dynamics of the Earth and the solar system. Building on Newton's theory of gravitation, he studied the mutual interactions between the sun and planets in the solar system, and between Jupiter and its satellites. He studied the famous 1:2:4 resonance between Io, Europa and Ganymede, opening the era of the scientific study of the world of Jupiter as a */coupled system/*. He also laid the foundations of the dynamical theory of tides, which plays a key role in the coupling between Jupiter and its satellites, and will be used to detect Europa's subsurface ocean. In his famous work "Exposition du système du Monde" (1796), he developed for the layman the nebular hypothesis of the formation of the solar system, first expressed by Emmanuel Swedenborg and Emmanuel Kant. The dominant contemporary theories of formation of the Jupiter system use this same hypothesis to explain the formation of Jupiter's regular satellites from its primordial subnebula.

The Laplace proposal has been elaborated and supported by a team of 359 scientists from 15 countries.

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