

## JUICE: A EUROPEAN MISSION TO JUPITER AND ITS ICY MOONS

BRANDT, Pontus<sup>1\*</sup> ; WITASSE, Olivier<sup>2</sup> ; TITOV, Dmitri<sup>2</sup> ; ALTOBELLI, Nicolas<sup>2</sup> ; BARABASH, Stas<sup>3</sup> ;  
BRUZZONE, Lorenzo<sup>4</sup> ; BUNCE, Emma<sup>5</sup> ; COUSTENIS, Athena<sup>6</sup> ; DOUGHERTY, Michele<sup>7</sup> ; ERD, Christian<sup>2</sup> ;  
FLETCHER, Leigh<sup>8</sup> ; GLADSTONE, Randy<sup>9</sup> ; GRASSET, Olivier<sup>10</sup> ; GURVITS, Leonid<sup>11</sup> ; HARTOGH, Paul<sup>12</sup> ;  
HUSSMANN, Hauke<sup>13</sup> ; IESS, Luciana<sup>14</sup> ; LANGEVIN, Yves<sup>15</sup> ; PASQUALE, Palumbo<sup>16</sup> ; PICCIONI, Guisepppe<sup>17</sup> ;  
PLAUT, Jeffrey<sup>18</sup> ; RETHERFORD, Kurt<sup>9</sup> ; WAHLLUND, Jan-erik<sup>19</sup> ; WURZ, Peter<sup>20</sup>

<sup>1</sup>The Johns Hopkins University Applied Physics Laboratory, <sup>2</sup>ESTEC, The Netherlands, <sup>3</sup>The Swedish Institute of Space Physics, Kiruna, Sweden, <sup>4</sup>Universita degli Studi di Trento, Italy, <sup>5</sup>University of Leicester, United Kingdom, <sup>6</sup>Observatoire de Meudon, France, <sup>7</sup>Imperial College London, United Kingdom, <sup>8</sup>University of Oxford, United Kingdom, <sup>9</sup>Southwest Research Institute, San Antonio, TX, USA, <sup>10</sup>Universite de Nantes, France, <sup>11</sup>Joint Institute for VLBI in Europe, The Netherlands, <sup>12</sup>Max-Planck-Institut fur Sonnensystemforschung, Germany, <sup>13</sup>DLR, Institut fur Planetenforschung, Germany, <sup>14</sup>Universita di Roma La Sapienza, Italy, <sup>15</sup>Institut d'Astrophysique Spatiale, France, <sup>16</sup>Universita degli Studi di Napoli Parthenope, Italy, <sup>17</sup>Istituto di Astrofisica e Planetologia Spaziali - Istituto Nazionale di Astrofisica, Rome, Italy, <sup>18</sup>Jet Propulsion Laboratory, Pasadena, CA, USA, <sup>19</sup>The Swedish Institute of Space Physics, Uppsala, Sweden, <sup>20</sup>University of Bern, Bern, Switzerland

The recently adopted European Space Agency (ESA) mission JUPITER ICY moon Explorer (JUICE), the first large mission selected by ESA within the Cosmic Vision 2015-2025 Programme, is currently planned for launch in 2022. Details of the mission are described, including the payload, planned orbits and the expected science return. The focus of JUICE is to characterise the conditions that may have led to the emergence of habitable environments among the Jovian icy satellites, with special emphasis on the three worlds, Ganymede, Europa, and Callisto, likely hosting internal oceans. Ganymede, the largest moon in the Solar System, is identified as a privileged target because it provides a natural laboratory for analysis of the nature, evolution and potential habitability of icy worlds in general, but also because of the role it plays within the system of Galilean satellites, and its unique magnetic and plasma interactions with the surrounding Jovian environment. The mission also focuses on characterising the diversity of coupling processes and exchanges in the Jupiter system that are responsible for the changes in surface, ionospheric and exospheric environments at Ganymede, Europa and Callisto from short-term to geological time scales. Focused studies of Jupiter's atmosphere and magnetosphere, and their interaction with the Galilean satellites will further enhance our understanding of the evolution and dynamics of the Jovian system.

Keywords: Jupiter, Ganymede, Europa, Callisto, Magnetosphere