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EUROPEAN SPACE AGENCY

SPACE SCIENCE ADVISORY COMMITTEE

Selection for assessment studies of M and L class missions for the first planning cycle of the Cosmic Vision 2015-2025 plan

The SSAC at its 120th meeting held at ESA HQ on 16-17 October 2007, considered the proposals submitted in response to the first Call of the new Cosmic Vision 2015-2025 plan. The Call resulted in 50 proposals covering the fields of Astronomy (19), Solar System science (19) and Fundamental Physics (12). The proposal evaluation was carried out by the discipline working/advisory groups, AWG, SSWG and FPAG, in the period between July and early October.

The objective of the SSAC was to select six missions (e. g. 3 L-class, e.g. 3 M-class) for assessment studies from the following set of proposals

XEUS, Tandem, Laplace, Dune, Space, Plato, Spica, Cross Scale, Marco Polo and Dune Express

which had been recommended by the working/advisory groups.

After hearing the reports from the working/advisory groups on the scientific ranking and from the Executive on the technical assessment and financial prospects and considering the international collaboration aspects relevant to these proposals, the SSAC selected the following six missions for assessment studies:

For the L-class missions, XEUS and a mission to the giant planets (Tandem/Laplace).

The SSAC was impressed by the very high science rating of these missions but considered that these missions would be best done in international collaboration.

The SSAC notes that to maximize the science output of XEUS the angular resolution must be optimized to achieve a goal of two arcsec. The SSAC also adopts the recommendation of the

AWG calling for a dedicated technology study for the optics taking into account alternative technological solutions.

Regarding Tandem/Laplace, the SSAC urges the Executive to start negotiations immediately with suitable partners as supported by the letters received with the proposals, in particular on a mission to one of the giant planets. These negotiations should result in a timely collaborative implementation plan and final decision on the target planet.

For the M-class, the SSAC recognises the very high scientific importance of studying dark energy, as addressed by the DUNE and SPACE mission proposals. However, given the significant differences between the proposed technical approaches, the SSAC recommends that ESA conduct an independent study defining the best path towards a European-led dark energy mission that is timely in the international context.

The SSAC further selects Plato from the suite of astrophysics missions as well as Cross Scale and Marco Polo from the suite of solar system missions.

The SSAC further notes that Spica is a mission of opportunity and recommends a delta study for a contribution based on existing European technology.

As international cooperation is important for some M-class missions, too, the SSAC asks the Executive to start negotiations with the relevant partners based on the letters received with the proposals.

In addition, the SSAC recommends ESA to define a plan addressing key technologies related to proposals with highly ranked scientific objectives that unfortunately lack the technological readiness required for consideration in the present selection cycle.

The SSAC takes note of the great scientific and technological potential that some of the fundamental physics proposals have, even for missions and experiments in other fields such as astronomy, planetary physics, and Earth sciences. The SSAC therefore strongly recommends enabling technology studies for the space implementation of ultra-stable clocks, cold atom interferometry, and accelerometry.

In addition, the SSAC strongly recommends enabling technology studies in the field of direct detection of terrestrial-size exoplanets and their spectroscopic characterization (including bio-signatures) as well as in the fields of ultra-high cosmic rays and solar probes.

The SSAC further notes that the development of RTGs is mandatory for future in-situ planetary missions and for missions to the outer solar system.

The SSAC expressed its gratitude to the working/advisory groups for having carried out their tasks with the support of the Executive in a most effective manner.