



## **Turbulence Heating Observer – THOR: mission overview and payload summary**

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The Turbulence Heating Observer (THOR) mission was selected as one of the three candidates, following the Call for Medium Class Missions M4 by the European Space Agency, with a launch planned in 2026. THOR is the first mission ever flown in space dedicated to plasma turbulence. THOR will lead to an understanding of the basic plasma heating and particle energization processes, of their effect on different plasma species and of their relative importance in different turbulent regimes. The THOR mission features one single spinning spacecraft, with the spin axis pointing toward the Sun, and 10 state-of-the-art scientific instruments, measuring electromagnetic fields and waves and electrons and ions at the highest spatial and temporal resolution ever achieved. THOR focuses on particular regions: pristine solar wind, Earth's bow shock and interplanetary shocks, and compressed solar wind regions downstream of shocks, that will be observed with three different orbits of 6 x 15 RE, 6 x 25 RE and 6 x 45 RE.

These regions are selected because of their differing turbulent fluctuation characteristics, and reflect similar astrophysical environments. The THOR mission, the conceptual design of the spacecraft and a summary of the payload will be presented. Furthermore, driving requirements and their implications for the spacecraft like Electromagnetic Compatibility and cleanliness will be discussed.