SOLAR ORBITER: LINKING THE SUN AND INNER HELIOSPHERE

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Solar Orbiter, a candidate mission in ESA's Cosmic Vision programme, is designed to study the Sun and inner heliosphere in greater detail than ever before. At the closest point on its heliocentric orbit, the Solar Orbiter spacecraft will be about 0.22 AU from the Sun, closer than any other satellite to date. In addition to providing high-resolution images of the solar surface, perihelion passes at these distances occur in near co-rotation with the Sun, allowing the instruments to track features on the surface for several days. The mission profile also includes a latitude cranking phase that will allow observations from up to 35° above the solar equator. Multiple Venus gravity assist manoeuvres will be employed to increase the inclination of the orbital plane. The combination of near-Sun, quasi-heliosynchronous and out-of-ecliptic observations by remote-sensing and in-situ instruments makes Solar Orbiter a unique platform for the study of the links between the Sun and the inner heliosphere. These aspects can be further enhanced by exploiting the joint capabilities of Solar Orbiter and NASA’s Solar Probe Plus mission, which is planned to be launched in the same time-frame as Solar Orbiter. In this paper, we review the status of the Solar Orbiter mission and discuss the joint science opportunities.

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