

## The Solar Orbiter mission: new views of the Sun

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Solar Orbiter is the latest mission of ESA and NASA to study the Sun and the heliosphere [1]. It is designed to address the overarching science question: “How does the Sun create and control the Heliosphere – and why does solar activity change with time?”. To this end, the spacecraft, designed to withstand the heat of the Sun (see Figure 1), carries a rich payload of state-of-the-art instruments, 6 to sense the Sun remotely and 4 for in-situ measurements (see Figure 2). Equally important for the success of the mission is the highly elliptical science orbit that will bring Solar Orbiter as close as 0.28 AU to the Sun at perihelion and, with time, will allow it to reach nearly 35 degrees in helio-latitude. This unique orbit will not only allow the powerful suite of remote-sensing and in situ instruments to together identify source regions of the solar wind, provide the sharpest view yet of the solar corona, and the first magnetic field maps of the far side of the Sun, it will also provide the very first views of the solar polar regions. These play an

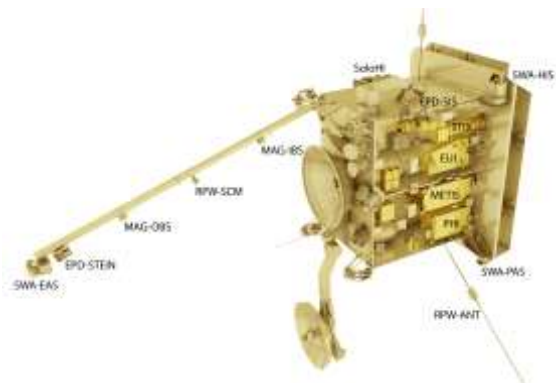
important role in the solar dynamo, but have never been imaged before. Since its launch in February 2020, Solar Orbiter has been in its cruise phase, during which a number of gravity assist maneuvers will bring it into its science orbit around the Sun, starting this autumn. All instruments have been successfully commissioned and the first observations look extremely promising. This presentation will give an overview of the science goals of this mission, of the spacecraft, orbit and instruments, as well as of the first data and results. An outlook for the near- and mid-term future is also provided.

### References

[1] D. Mueller *et al*, A&A **642**, A1 (2020)



**Figure 1.** Artist's impression of the front view of the Solar Orbiter spacecraft, showing the heat shield with the open apertures for the remote sensing instrument



**Figure 2.** Cutout of the spacecraft showing the suite of remote sensing instruments. The various instruments are annotated.