

The Solar Probe Mission

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Solar Probe, the first mission to the Sun and the third of three missions in NASA's Outer Planets/Solar Probe (OP/SP) Program, is a voyage of exploration, discovery, and comprehension. This near-Sun flyby will provide *in situ* measurements in the solar corona and high-resolution pictures and magnetograms of the photosphere and polar atmosphere. These measurements are also needed as "ground truth" for interpreting the many measurements of the Sun and solar activity that have been made from a distance of 1 AU.

Solar Probe is scheduled for launch in February 2007. It will arrive at the Sun along a polar trajectory perpendicular to the Sun-Earth line with a perihelion of 4 solar radii from the Sun's center. Two perihelion passages will occur, the first in 2010 (near solar maximum) and the second in 2015 (near solar minimum) ensuring measurement of both coronal hole and streamer-related solar wind properties. To reach the Sun, Solar Probe must first fly to Jupiter and use a gravity assist to lose its angular momentum about the Sun. The imaging and *in situ* miniaturized instruments will provide the first 3-dimensional view of the corona, high spatial- and temporal-resolutions of the magnetic fields, and helioseismic measurements of the polar regions, as well as sporadic high-spatial-resolution local sampling of plasmas and fields at all latitudes.

Solar Probe will use common OP/SP management and design approaches, avionics and mission software to reduce costs. Unique to Solar Probe is a heat shield that will also act as a high-gain antenna.