

SOME OPTIONS FOR A NASA SOLAR PROBE MISSION

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Smaller and lower cost options of NASA's Solar Probe mission have recently been studied. The difference between these options and the results of earlier studies is dramatic. The motivation for low cost has encouraged the JPL design team to accommodate a smaller scientific payload using innovative multi-functional subsystems. The thermal shield that is synonymous with a close solar mission has been dramatically redesigned to provide multiple functions of shielding, communications, and (on some options) science instrument accommodation. Other new concepts to support the science include a central computer with high performance capability that will process data on-board, and a boom mounted platform for a plasma spectrometer (on some options) that will provide a nearly spherical field-of-clearance from spacecraft obscurations. The goal of a new research program supported by NASA will be to develop a miniaturized scientific payload for these smaller Solar Probe options. The options demonstrate that high performance systems can be designed to accomplish the mission within highly constrained mass, power, and costs.