

## **NASA's Interstellar Probe Mission**

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Sending a spacecraft beyond the heliopause to begin the exploration of our local galactic neighborhood will be one of the grand scientific enterprises of the next century. NASA's Interstellar Probe will be the first spacecraft designed to explore the nearby interstellar medium and its interaction with our solar system. In the mission concept developed in 1999 by NASA's Interstellar Probe Science and Technology Definition Team, a 400-m diameter solar sail accelerates the spacecraft to  $\sim 15$  AU/year. The principal objectives of the Interstellar Probe mission would be to (1) explore the nature of the ISM and its implications for the origin and evolution of matter in our galaxy and the universe; (2) explore the influence of the ISM on the solar system and its dynamics and evolution; (3) explore the impact of the solar system on the ISM as an example of a stellar system with its environment; and (4) explore the outer solar system in search of clues to its origin and to the nature of other planetary systems. To achieve these broad, interdisciplinary objectives, Interstellar Probe will include a suite of advanced low-power instruments designed to measure the detailed properties of the plasma, neutral atoms, energetic particles, magnetic fields, and dust in the outer heliosphere and nearby ISM. This talk will summarize the conceptual mission design and the technological challenges presented by this ambitious mission.