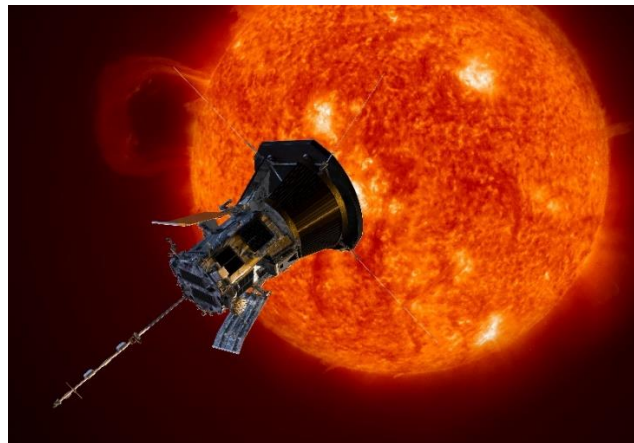


Prof. David Malaspina

CU Boulder

Into the Wind: Exploring Solar Wind Physics with Parker Solar Probe

In March of 2022, NASA's Parker Solar Probe spacecraft will have completed its 11th close approach to the Sun, traversing nearly 94% of the distance between Earth and the solar surface. The goal of this historic mission of discovery is to understand the fundamental physics that govern the creation and dynamics of stellar winds. To accomplish its mission, Parker Solar Probe measures particles, electric fields, magnetic fields, and photons in near-Sun space, all while enduring extreme heat, extreme cold, and travel at unprecedented speeds. This talk will discuss the scientific questions that motivated the Parker Solar Probe mission, and the instruments carried by the spacecraft, including the contribution to the FIELDS instrument made by the University of Colorado's Laboratory for Atmospheric and Space Physics (LASP). Key scientific results from Parker Solar Probe will be presented, including quantification of the solar ambipolar electric field, the discovery of novel plasma waves and instabilities, traversal of the Alfvén surface, efforts to trace solar surface magnetic structure into the solar wind, and new bounds on the solar processing of interplanetary dust. Finally, this talk will address the future of Parker Solar Probe as it continues to step closer and closer to the solar surface.



Short bio

David Malaspina is an assistant professor in the Astrophysics and Planetary Sciences department at the University of Colorado, Boulder. His research focuses on the study of fundamental plasma physics in space environments. Using data from spacecraft, he has explored the Sun, the solar wind, the Earth's ionosphere and radiation belts, and the Lunar plasma environment. Knowledge of space plasma physics processes is vital for understanding and predicting how solar activity, via space weather, impacts our increasingly technology-dependent society both on Earth and in space.