The Dust Environment in the Inner Heliosphere

Russell Howard¹, Guillermo Stenborg¹, David Malaspina², Jamey Szalay³, and Petr Pokorny⁴,⁵

¹U.S. Naval Research Laboratory, Space Science Division, Washington, DC, United States of America
²University of Colorado, Laboratory for Atmospheric and Space Physics, Boulder, CO, United States of America
³Princeton University, Princeton, NJ, United States of America
⁴NASA, Goddard Space Flight Center, Greenbelt, MD, United States of America
⁵Catholic University of America, Department of Physics and Astronomy, Washington, DC, United States of America

The Parker Solar Probe (PSP) mission has completed 4 encounters through the solar corona significantly closer to the Sun than previous measurements. While PSP does not have a dedicated dust detector, measurements by the various instruments can provide insights into the dust environment in the inner heliosphere. Throughout the PSP orbit, interplanetary dust is impacting the spacecraft. Three-dimensional reconstructions of FIELDS observations show that the rate and direction of the dust impacts varies throughout the PSP orbit. During the encounter WISPR also finds the rate of impacts changes through the encounter period, but also a decrease in the intensity of the light scattered by the dust particles. The smooth decrease in the WISPR intensity beginning at about 0.1 AU is consistent with the production of Beta-meteroids seen by FIELDS. In this presentation, we will discuss the observations from the FIELDS and WISPR instruments and discuss initial models of the dust environment. The authors acknowledge support from the NASA Parker Solar Probe program.