



The Solar Corona and Accelerating Solar Wind: Parker Solar Probe

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The magnetic field is fundamental to solar activity and shapes the interplanetary environment. Magnetic fields are also the source for coronal heating and the very existence of the solar wind; produced by the sun's dynamo and emerging into the corona, magnetic fields become a conduit for waves, act to store energy, and then propel plasma into the heliosphere in the form of Coronal Mass Ejections (CMEs). In 2018 the Parker Solar Probe (PSP) mission will launch to carry out the first in situ exploration of the outer solar corona and inner heliosphere. Direct measurements of the plasma in the closest atmosphere of our star should lead to a new understanding of the questions of coronal heating and solar wind acceleration. I will describe the PSP scientific objectives, instrument suites, and models of solar magnetic activity, coronal heating, and solar wind acceleration that PSP may confirm or falsify. The latter involve our most recent understanding of MHD turbulence, magnetic reconnection, and electron and ion heating and acceleration in complex magnetic fields.