

Particle Acceleration at Shocks at 1 AU and Beyond

Decker, Rob, rob.decker@jhuapl.edu, Johns Hopkins Applied Physics Laboratory, Laurel, MD, USA

This talk will focus on observations of energetic ion and electron distributions at shock waves in the helioradial range from 1 to ~100 AU. We are most familiar with particle acceleration at CME-associated shocks near 1 AU. However, during particularly active periods around solar maximum, two or more strong solar wind disturbances can coalesce to form merged or global merged interaction regions that drive global-scale shocks into the outer heliosphere, to the termination shock, and beyond. These shocks continue to accelerate particles for many months as they propagate outward. We will use measurements made mainly by the Voyager 1 and 2 spacecraft to characterize how shock-accelerated particle intensities and angular distributions evolve with helioradial distance and with solar cycle. We will also compare accelerated particle populations at measured traveling heliospheric shocks with those measured at the termination shock.