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Reconnection in the Solar Wind: An Update JOHN GOSLING, University of Colorado — Magnetic reconnection plays a central role in a wide variety of observed solar and space phenomena. In the solar wind magnetic reconnection commonly occurs in a quasi-stationary mode at extended X-lines. It produces Petschek-like exhausts of roughly Alfvénic jetting plasma typically bounded by back-to-back rotational discontinuities that bifurcate a reconnecting current sheet. It occurs at thin current sheets most frequently associated with relatively small (less than 90 deg) magnetic field rotations in low beta plasma. Reconnection exhausts are observed most frequently (typically 1-3 events/day at 1 AU) in the low-speed wind and within interplanetary coronal mass ejections, and less frequently (0.6 events/day) in the Alfvénic turbulence characteristic of the high-speed wind from coronal holes. Reconnection occurs relatively infrequently at the heliospheric current sheet, HCS, but observations of exhausts at the HCS are particularly revealing of the magnetic field topology changes associated with the reconnection process. Reconnection in the solar wind is usually fast, but not explosive – the magnetic energy release occurs over a long time interval following reconnection as the Alfvénic disturbances initiated by the process propagate into the surrounding solar wind plasma. There is as yet no hard evidence that indicates that reconnection in the solar wind ever produces substantial particle acceleration.

John Gosling
University of Colorado

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