

Invited Review: Observational Aspects of Wave Acceleration in Open Magnetic Regions

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Abstract

This presentation reviews the latest observational evidence for the existence of propagating waves in the open magnetic flux tubes of the solar corona. SOHO measurements have put tentative limits on the fluxes of various types of magnetohydrodynamic (MHD) waves in the acceleration region of the solar wind. Also, continually improving measurements of fluctuations at larger distances (i.e., in-situ detection and radio scintillation) continue to provide significant constraints on the dominant types of plasma oscillation throughout the corona and wind. The dissipation of MHD fluctuations of some kind, probably involving anisotropic turbulent cascade, is believed to dominate the heating of the extended corona. Spectroscopic observations from the UVCS instrument on SOHO have helped to narrow the field of possibilities for the precise modes, generation mechanisms, and damping channels. This presentation will also review some of the collisionless, kinetic aspects of wave heating and acceleration that are tied closely to the observational constraints.