

SPACE PHYSICS SEMINAR

Nancy Crooker Boston University

AGU Parker Lecture Rerun: Heliospheric Pattern Recognition

Thursday, January 23, 2014 725 Commonwealth Ave. Refreshments at 3:30pm in CAS 500 Talk begins at 4:00pm in CAS 502

Abstract:

It is well known that patterns must be recognized before models can be built to aid in our understanding of complex systems. Pattern recognition is one of the pleasures of doing science. Foundational understanding rooted in pattern recognition in the heliospheric system was provided by Professor Parker, famously in the form of the Parker spiral describing the heliospheric magnetic field. Following in that tradition, our community has recognized a profusion of patterns on all scales in the heliosphere, from turbulent flux tubes to the shape of its outer boundaries. It is the magnetic (rather than gravitational) organization of space that affords this wide variety of pattern over a broad range of scales. Examples of the variety of patterns recognized at magnetospheric and heliospheric mesoscales will be presented. These involve magnetic reconnection, the structure of the heliospheric current sheet, the coronal hole boundary, and sources of slow solar wind. The primary tools used to recognize these patterns are observations of suprathermal electrons and magnetic fields. From these data one can recognize not only pattern but clues about origin.