

Space Science Seminar
Tuesday, 2022 February 15
10:30 a.m.
NASA/MSFC TEAMS

**What are the 'Magnetic Switchbacks' Observed by the Parker Solar Probe
(PSP) Spacecraft?**

Nais Fargette / Institut de Recherche en Astrophysique et Planétologie (IRAP) / CNRS, UPS,
Toulouse, France

Host: Dr. Alphonse Sterling (Sponsored by NASA/MSFC/ST13)

Near the Sun, the solar wind magnetic field is dominated by Alfvénic structures that undergo reversals of the radial magnetic field, while keeping a constant strahl (suprathermal field-aligned beam-like electrons) and a constant magnetic-field amplitude. These Alfvénic structures are called "magnetic switchbacks" and are interpreted as accelerated folds on the magnetic field in the solar wind. They were observed by earlier missions, including Wind and Ulysses, and also more recently by Solar Orbiter. But they are most striking in Parker Solar Probe (PSP) data inside of 0.3 AU from the Sun. Their origin is still debated, but suggested scenarios include: interchange reconnection near the Sun's surface, propagation of Alfvénic waves, turbulence driven phenomenon, etc. In this talk I will present some characteristics of the switchback structures, give an overview of the existing formation theories, and describe the latest results on the topic. In particular, I will discuss their possible connection to supergranulation and the solar surface magnetic network.