

Space Science Seminar
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10:30 a.m.
NASA/MSFC TEAMS

Origin of Small Chromospheric Jets and Their Influence in the Solar Corona

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

Rapidly evolving fine-scale jets, e.g., spicules, are the most prominent and dynamical phenomena observed in the solar chromosphere. Around a few million of these small jets shoot plasma material out from the Sun's surface at any given instant. These jets are likely crucial in key solar physics mysteries, such as chromospheric and coronal heating and mass supply to the solar wind. Despite intensive delving in the past decades, there is still no clear consensus on how these small jets of magnetized plasma originate from the solar surface, nor do we understand how they transfer energy into and possibly heat the solar atmosphere. The exact source of these small-scale jets is hard to observe due to the resolution limitations of previous telescopes. Therefore, they remain poorly understood. Using unprecedented multi-wavelength and high-sensitive magnetic field observations from the 1.6-m Goode Solar Telescope at the Big Bear Solar Observatory, we strive to reach conclusions on the possible scenario among the many proposed hypotheses of these jets' origin. We found that the dynamical interaction of magnetic fields in the partially ionized lower solar atmosphere is the precursor of these high-speed jets, which subsequently energizes the upper solar atmosphere.