Contribution ID: **10** Type: **Contributed Oral**

Unveiling the Solar Nexus: An Interdisciplinary Inquiry into the Dynamics of Our Star

Tuesday 2 December 2025 17:00 (15 minutes)

The Sun exists at the intersection of many scientific frontiers, where classical and modern physics converge with environmental science, engineering, and data analytics. This paper presents a novel interdisciplinary approach to solar physics, emphasizing how understanding the Sun requires crossing traditional disciplinary boundaries. We explore the fusion-driven processes at the core, the fluid-like behavior of plasma in its outer layers, the emergence of magnetic structures, and their far-reaching influence through solar wind and radiation. Integrating methods from thermodynamics, electromagnetism, computational modeling, and Earth system science, we construct a unified perspective of the Sun not only as a stellar object, but as a dynamic agent shaping physical, ecological, and technological systems. This approach opens pathways for collaborative research that connects astrophysics with real-world applications in climate science, space weather prediction, and renewable energy.

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Session Classification: Solar Terrestrial and Space Physics

Track Classification: Topical Groups: Solar Terrestrial and Space Physics