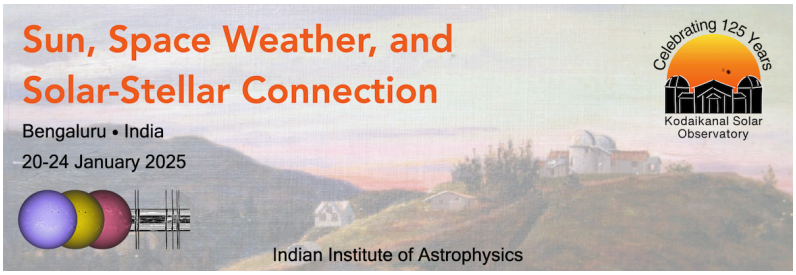

Contribution ID: **27** Type: **Invited talk**

Solar Jets: Insights from High-Resolution Observations and Numerical Simulations

Wednesday, January 22, 2025 11:25 AM (20 minutes)

Solar jets are highly collimated plasma flows accelerated along magnetic field lines due to magnetic reconnection, often originating from anemone-shaped arcades. These impulsive jets, particularly broader ones, frequently exhibit untwisting motions. In this study, we analyze a solar jet associated with a circular flare ribbon using high-resolution data from the Swedish 1-meter Solar Telescope (SST), in coordination with IRIS and SDO. We compared the observed jet features with a 3D numerical simulation of reconnection-driven jets performed with the ARMS code. Three significant observational signatures were identified: (1) the formation of a hook along the circular ribbon, (2) the jet's widening through displacement of its kinked edge toward the reconnection site, and (3) the fallback of some jet plasma toward an offset footpoint. These features, which align with the 3D asymmetric reconnection geometry of swirled-anemone loops, suggest that such characteristics are common in impulsive solar jets. The generic nature of the simulation supports the hypothesis that these features are typical in similar jet events.

Contribution Type

Theme

Energetic Phenomena

Primary author: JOSHI, Reetika (Rosseland Centre for Solar Physics)

Co-authors: Dr AULANIER, Guillaume (Sorbonne Université, École Polytechnique, Institut Polytechnique de Paris, Observatoire de Paris –PSL, CNRS, Laboratoire de Physique des Plasmas (LPP), 4 Place Jussieu, 75005 Paris, France); Ms RADCLIFFE, Alice (Sorbonne Université, École Polytechnique, Institut Polytechnique de Paris, Observatoire de Paris –PSL, CNRS, Laboratoire de Physique des Plasmas (LPP), 4 Place Jussieu, 75005 Paris, France); Prof. ROUPPE VAN DER VOORT, Luc (Rosseland Centre for Solar Physics, University of Oslo, PO Box 1029, Blindern 0315, Oslo, Norway); Dr PARIAT, Etienne (Sorbonne Université, École Polytechnique, Institut Polytechnique de Paris, Observatoire de Paris –PSL, CNRS, Laboratoire de Physique des Plasmas (LPP), 4 Place Jussieu, 75005 Paris, France); Dr NÓBREGA-SIVERIO, Daniel (Instituto de Astrofísica de Canarias, 38205 La Laguna, Tenerife, Spain); Prof. SCHMIEDER, Brigitte (LIRA, Observatoire de Paris, Université PSL, CNRS, Sorbonne Université, Université de Paris, 5 Place Jules Janssen, 92195 Meudon, France)

Presenter: JOSHI, Reetika (Rosseland Centre for Solar Physics)

Session Classification: Flares and CMEs