



Contribution ID: 157

Type: **Poster**

Simulating electron acceleration in shocks: stochastic shock drift acceleration

The presence of energetic electrons in the heliosphere is associated with solar eruptions, but details of the acceleration and transport mechanisms are still unknown. We explore how electrons interact with shock waves under the assumptions of stochastic shock drift acceleration (SSDA). Consideration of the shock wave parameter space, such as shock speed, shock obliquity, shock thickness, and plasma density upstream of the shock, helps determine electron spectra and their highest energies. With suitable simulation parameters, the SSDA model is able to accelerate thermal electrons to relativistic energies and, additionally, able to produce an electron beam upstream of the shock wave, a requirement for the type II radio burst seen in radio observations associated with shock waves and particle acceleration.

This presentation delves into the results of the presented model in regards to electron acceleration and transport within shock waves, contributing to our understanding of solar and interplanetary phenomena and their practical applications in space weather forecasting.

Primary authors: NYBERG, Seve (Department of Physics and Astronomy, University of Turku); VAINIO, Rami (University of Turku, Finland); Mr VUORINEN, Laura (University of Turku, Department of Physics and Astronomy); AFANASIEV, Alexandr (University of Turku)

Session Classification: Coffee break and poster session 1

Track Classification: Fundamental mechanisms of solar plasmas: magnetic reconnection, waves, radiation and particle acceleration