



Contribution ID: 466

Type: Poster

How solar accelerated electron beams vary as a function of distance from the Sun

Monday, 6 September 2021 15:30 (13 minutes)

Solar electrons beams are accelerated in the corona, into the solar wind and beyond in the Solar system through eruptive mechanisms at the surface of the Sun such as flares. These beams of non-thermal electrons evolve as a function of distance from the Sun, interacting with the background plasma and growing Langmuir waves as they propagate. Subsequent radio and X-ray wavelength emission is also seen. Insight into electron beam transport effects allows us to disentangle them from the acceleration properties and provides a framework for using in situ measurements to diagnose coronal acceleration characteristics. Through beam-plasma structure simulations we study the interactions between these electron beams and the background plasma of the solar corona and beyond at different distances from the Sun. This allows us to determine what is the maximum electron velocity responsible for Langmuir wave production and growth, and consequently which electron energies these correspond to. Understanding the mechanisms driving the change in the maximum electron velocity will permit more accurate predictions in electron onset as well as arrival times, relevant for space weather applications and the understanding of the subsequent emissions at radio and X-ray wavelength. Moreover, our radial predictions can be tested against in-situ electron and plasma measurements from the instruments on-board the Solar Orbiter and Parker Solar Probe spacecrafts.

Student poster?

Do you want to be considered for a student poster prize?

Primary author: LORFING, Camille (University College London)

Co-author: Dr REID, Hamish

Presenter: LORFING, Camille (University College London)

Session Classification: Poster Session 2.6

Track Classification: Session 5 - Solar-Terrestrial Relations, Solar Wind, Space Weather and Space Climate