



Contribution ID: 353

Type: Poster

Role of whistlers in the formation of electron energy spectrum in flares

Wednesday, 8 September 2021 17:22 (13 minutes)

Whistlers can be important both for electron transport in flaring loops and for electron scattering in acceleration sites. In this talk we focus on two questions: how accelerated electrons generate whistlers in a flaring loop and how the initial electron energy spectrum is transformed due to interactions with the whistlers. It is shown that for a given non-stationary injection of nonthermal electrons, all three regimes of turbulent diffusion, weak, moderate, and strong, can be realized simultaneously but in different energy domains. It is found that the reverse action of the generated whistler turbulence significantly changes characteristics of the spatial, temporal, pitch-angular and energy distributions of electrons. In particular, the energy spectrum of electrons in the range 30 keV - 10 MeV can undergo transitions from hard to softer and again to harder. Besides of this, the electron spectrum undergoes some specific temporal changes. The obtained results can be of great importance for microwave, hard X-ray, and gamma-ray diagnostics of solar and stellar flares.

Primary author: MELNIKOV, Victor (Pulkovo Observatory of RAS)

Co-author: Dr FILATOV, Leonid (Nizhny Novgorod State University of Architecture and Civil Engineering)

Presenter: MELNIKOV, Victor (Pulkovo Observatory of RAS)

Session Classification: Poster Session 8.4

Track Classification: Session 3 - Fundamental Plasma Processes in the Solar Atmosphere: Magnetic Reconnection, Waves, Emission, Particle Acceleration