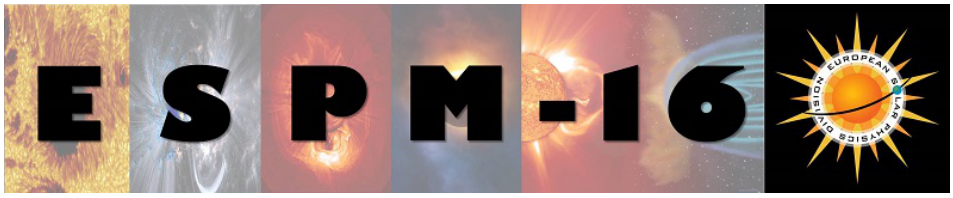

Contribution ID: **183** Type: **Invited talk**

The role of turbulence in solar flares

Thursday, 9 September 2021 14:00 (20 minutes)

Solar flares are efficient particle accelerators and prime laboratories for studying astrophysical acceleration and transport processes and our understanding has been enhanced by observationally-driven modelling and multi-wavelength observations from X-rays to (E)UV to radio. During the flare, random motions of the magnetised plasma leading to turbulence may play a vital role in converting magnetic energy to the kinetic energy of accelerated particles. The excess broadening of spectral lines (so-called non-thermal broadening), and in particular spatially resolved (E)UV observations with Hinode/EIS and IRIS, can be used to understand these motions and the important role of turbulence during a flare. Previous studies have shown significant non-thermal broadening in active regions in the pre-flare stages and in flares, although non-thermal broadening generally increases with temperature and height in the coronal loop top source, observations show the presence of non-thermal broadening in all regions of the flare from the loop top source, along loop legs and into the chromosphere. In this talk, I will summarise key observations of solar flare turbulence and discuss the role turbulence plays in solar flare energetic electron acceleration and transport.

Primary author: JEFFREY, Natasha (Northumbria University)

Presenter: JEFFREY, Natasha (Northumbria University)

Session Classification: Plenary 5

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