



Transport of energetic electrons in the corona and interplanetary medium: input of combined X-ray and radio observations

Nicole Vilmer

LESIA- Paris Observatory, 92195 Meudon, France (nicole.vilmer@obspm.fr)

Efficient particle acceleration is produced in association with solar flares and coronal mass ejections. Radio and X-ray emissions provide the most direct information on the properties of energetic electrons in the solar atmosphere. However, particle transport from the acceleration region to the emission sites remains a challenging topic and has a crucial impact on the evaluation of the properties of accelerated particles from the observations of their radiation. I shall present here recent results on the transport of energetic electrons in the solar corona obtained from X-ray imaging spectroscopy data from RHESSI in combination with observations of radio gyrosynchrotron emissions. I will show that these observations support electron diffusive transport in the corona. The interpretation of both X-ray and radio observations furthermore leads to the first estimate of the energy dependence of the scattering mean free path of energetic electrons in the low corona. This result is discussed and compared with studies of the energy dependence of the scattering mean free path of electrons in the interplanetary medium. Recent results on the relation between escaping electrons that generate radio (type III) emissions in the corona and in the interplanetary medium and electrons confined to the lower atmosphere of the Sun that produce HXRs will be discussed. I will finally describe how these studies can be continued in the future using measurements from the new solar and heliospheric missions.