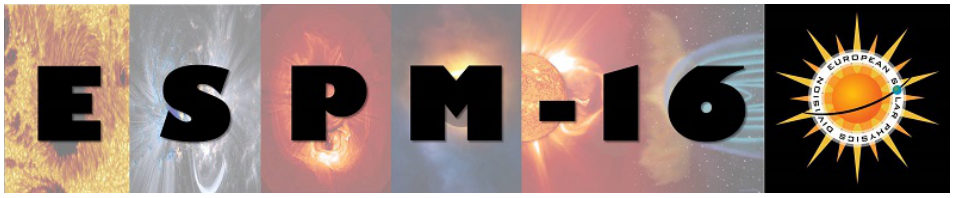

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Interaction of particles beams with chromosphere during impulsive phase of solar flares

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Energy transport by fast, non-thermal particles from primary energy release place - located in the top of flaring loop - to the loop foot-points, plays very important role in solar flares. A fully understanding of the processes of transportation, energy deposition in the chromosphere and radiative response of chrompospheric plasma requires both: high (sub-second) cadence observations and numerical models consistent with them.

The analysis of two compact solar flares with similar GOES-class (C1.1 and C1.6), but with significance differences during impulsive phase is presented. Variations of the position and the vertical extent of the energy deposition layer (EDL) as well as variations of the flaring spectra and emission intensities recorded in the Hα hydrogen line are studied.

The variations of the HXR fluxes and Hα intensities were well-correlated in time during the impulsive phases of the flares, and they agreed with the variations of the calculated position and vertical extent of the EDL. Impulsive variations of the Hα emission were caused by individual, short-time episodes of energy deposition by the electron beams on various depths in the chromospheric plasma.

The compared flares were observed in Hα line with very high time resolution (20 spectra-images per second) using the MSDP spectrograph at Bialkow Observatory (University of Wroclaw, Poland), as well as by GOES and RHESSI satellites in X-ray domain. The numerical model was calculated assuming that the external energy is delivered to the flaring loop by non-thermal electrons.

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