Differential emission measure distributions in X-ray solar flares

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X-ray spectrometer RESIK has observed spectra in the four wavelength bands from 3.3 Å to 6.1 Å. This spectral range contains many emission lines of H- and He-like ions for Si, S, Ar and K. These lines are formed in plasma of coronal temperatures (T>3 MK). Analysis of their intensities allows studying differential emission measure distributions (DEM) in temperature range roughly between 3 MK and 30 MK.

The aim of present study was to check whether any relationship exists between the character of DEM distribution and the X-ray flare class. To do this we have calculated the DEM distributions for a set of flares belonging to different GOES classes from the range B4 to X1.

The DEM distributions have been calculated using "Withbroe - Sylwester" multiplicative, maximum likelihood iterative algorithm. As the input fluxes for DEM calculations we have used absolute fluxes observed in several individual lines and spectral bands observed by RESIK. Respective emission functions have been calculated using the CHIANTI v. 5.1 atomic data package.