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The Solar Line Emission Dopplerometer (SLED), a state-of-the-art imaging spectrograph for the dynamics of solar coronal structures

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Analysis of the dynamics of the hot coronal plasma is the most promising method to examine the contribution of wave-like phenomena in the global heating of the solar corona. We present here a new, state-of-the-art instrument for imaging spectroscopy: the Solar Line Emission Dopplerometer (SLED). It is based on the Multi-channel Subtractive Double Pass (MSDP) principle, which combines the advantages of filters and slit spectrographs. The SLED (presently under construction) will observe coronal structures in the forbidden lines of FeX 637.4 nm and FeXIV 530.3 nm. It will measure Doppler shifts up to 150 km/s with high precision (50 m/s) and fast cadence (1 Hz), over a 1000" x 150" rectangular FOV (for six meter telescope's focal length). The SLED is optimized to detect high-frequency wave-like plasma motions which could be the signatures of the coronal heating processes and allows studies of the dynamics of fast evolving events. A numerical simulation of observations is shown to demonstrate the capabilities of the instrument. The regular observations will be performed with the high-altitude coronagraph at Lomnický Stit Observatory (LSO), and during total solar eclipses.

Student poster?

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