[SO-07] Capability of Fast Imaging Solar Spectrograph on NST/BBSO for Observing Filaments/Prominences at the Spectral Lines Hα, Ca II 8542, Ca II K

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Spectral line profiles of filaments/prominences to be observed by Fast Imaging Solar Spectrograph (FISS) are studied. The main spectral lines of interests are Hα, Ca II 8542, Ca II K. The FISS has high spectral resolving power of 200,000, and supports simultaneous dual-band recording. This instrument is to be installed at 1.6m New Solar Telescope (NST) of Big Bear Solar Observatory, which has high spatial resolution of 0.065″ at 500nm. In this study, we have tried to find out model spectral line profiles from some observation data. Intensity profiles of filaments/prominences have been simulated based on cloud model, and we have tried to find the ranges of model parameters. From these, we have calculated the expected spectral line profiles when observed by the FISS. Additionally, assuming that there exist multi-velocity threads, we have found that the FISS is suitable for distinguishing velocity components only in Ca II lines. Finally, we have suggested optimal parameters for the recording CCD cameras to show their best performance.

[SO-08] Comparison Coronal Density from UVCS and MLSO MK4 Coronameter

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We have compared the radial density distribution of solar corona obtained by SOHO UltraViolet Coronagraph Spectrometer (UVCS) and Mauna Loa Solar Observatory (MLSO) MK4 coronameter respectively. This is the first attempt to compare coronal densities obtained by both instruments. In the spectral data of UVCS to examine physical quantities of corona, we selected two emission lines (O VI 1032A and 1037.6A), which have both radiative and collisional rate components. The coronal number density was determined from the ratio of these two components. The MK4 coronameter has a field of view ranging between 1.08 and 2.85 solar radii. The coronal density could be determined by inverting MLSO MK4 polarization maps. We found that mean number densities of a helmet streamer observed by MK4 at 2003 April 28 are quite consistent with those observed by UVCS. Our result demonstrates that MK4 can provide us the coronal density distribution of a large view field with about three minutes spatial resolution. For the coronal hole and active region observed on 1999 October 19, 23, and 24, the MK4 coronal densities are estimated to be about two times larger than those from the UVCS.