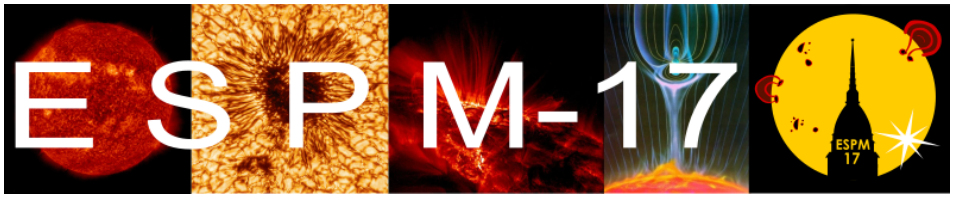

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State-of-the-art Image Slicer developments to Enable 2D Extreme Ultraviolet Imaging Spectroscopy in Seconds.

Observations in the Extreme Ultraviolet (EUV) are crucial for understanding the dynamics of the solar corona. The current EUV observing method utilises an entrance slit and scans over a field of view to build up 2D imaging spectroscopy. This scanning results in low-cadence images on the order of minutes which misses fundamental processes that occur on faster timescales. The application of image slicers for EUV integral field spectrographs is therefore revolutionary as they will enable observations of EUV spectra from an entire 2D field of view in seconds. However, the current technology limits their use, with future image slicer developments focussing mainly in two key parameters: the reduction of the slicer mirror width and the improvement of the surface roughness. We present results from a recent study that allows higher resolution better surface roughness to reduce stray light, and innovative ideas when using these slicers for highly efficient Integral Field Spectrographs. We show the thinnest metal image slicers that have been produced in the world to date. These improvements in image slicer technology are one big step towards implementing the Spectral Imaging of the Solar Atmosphere (SISA) instrument proposal for observing important spectroscopic diagnostics for characterization of solar coronal and flare plasmas.

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Track Classification: Diagnostic tools and numerical methods in solar physics