

CMEs, Flares, Prominences in Lyman-alpha: Science Preparations for ASO-S/LST

Li Feng¹, Hui Li¹, Ying Li¹, Beili Ying¹ and other LST team members

¹ Purple Mountain Observatory, Chinese Academy of Sciences

e-mail (speaker):lfeng@pmo.ac.cn

We summarize our science preparations for the Lyman-alpha Solar Telescope (LST) aboard the Chinese ASO-S (Advanced Space-based Solar Observatory) mission which is scheduled for launch in October 2022. LST has the capability to simultaneously observe the Sun from the solar disk to 2.5 solar radii in both Lyman-alpha and visible light (Figure1). Our particular interests are coronal mass ejections (CMEs), flares, and prominences in the new Lyman-alpha waveband. We Synthesize these eruptive features in Lyman-alpha based on various numerical simulations concerning both optically thin and thick regimes, to understand their behaviors and underlying physics in Lyman-alpha. Their statistical and case studies based on Lyman-alpha measurements from GOES/EUVS, SOHO/UVCS (Figure 2) and so on are also included to reveal flare and CME properties and develop physical diagnostic tools. The global magnetic field configurations in which CMEs propagate are computed either with PFSS model or Magneto-hydrodynamic simulations.

References

- [1] Li et al., Res. in Astron. and Astroph., 19, 158 (2019)
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- [3] Ying et al., Astrophysical Journal, 899, 12 (2020)

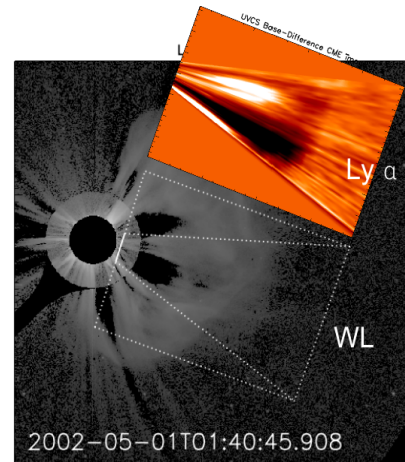


Figure 2 simultaneous observations of a CME in Ly-alpha and white light.

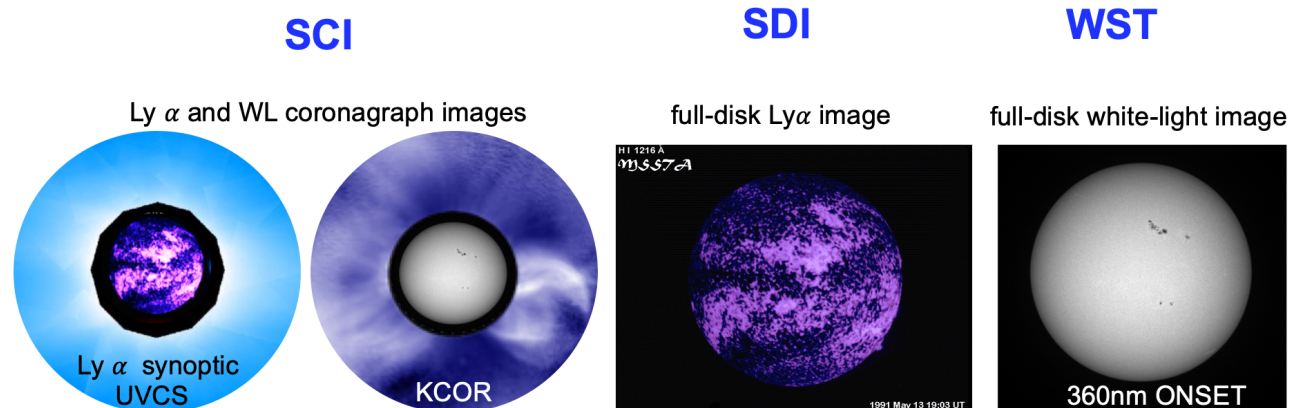


Figure 1 future data products of three instruments of LST