

Session 2

(Invited) The impact of He I 1083 nm spectropolarimetry in solar physics

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He I 1083 nm is a unique spectral line in the solar spectra. The line appears strongest in chromospheric temperature plasma that is irradiated by strong coronal EUV emission, which plays an important contribution in how energy levels in neutral helium atoms are populated. In addition, the line is very sensitive to the magnetic field in the chromosphere through the Zeeman and Hanle effects. In this talk, I am going to present some studies utilizing the unique features of this line to address some important science questions in solar physics. The line has been used to measure expansion of magnetic flux tubes (Orozco Suárez et al. 2015), investigate (de)coupling of neutral atoms from plasma (Schad et al. 2013), track heating in plage regions and the corona (Anan et al. 2021; Solanki et al. 2003), measure the magnetic fields in corona via coronal rain (Schad 2018), as well as address the global energetic of solar flares (Anan et al. 2018), and so on. Since DKIST will have two instruments with He I 1083 nm spectropolarimetric capabilities, the improved cadence and spatial resolution will lead to new discoveries using this line.