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”Probing the thermal structure of the solar chromosphere with ALMA and optical/NIR observations ”

Monday, October 14, 2019 6:20 PM (15 minutes)

Contributed talk

Abstract:

“ALMA is a powerful new instrument that allows an unambiguous determination of the solar chromospheric temperature, and its rapid evolution. When combined with multiwavelength observations in other diagnostics, most notably strong optical/NIR spectral lines, this allows us to probe the highly structured atmosphere throughout much of its height and with high spatial and temporal resolution.

We will discuss several unique datasets that combine solar ALMA observations in Bands 3 and 6 with simultaneous imaging spectroscopy from the Interferometric Bidimensional Spectrometer (IBIS) operating at the Dunn Solar Telescope/NSO. We find that parameters of “classical” chromospheric spectral lines of H-alpha and Ca II are in some cases closely correlated with the ALMA brightness temperatures, posing strong constraints to interpretation of the observed spectral intensities in terms of dynamical properties.

We will also present information on the temporal evolution of dynamic events as seen by ALMA, comparing those with the shocks and small-scale impulsive events seen in the co-temporal ground-based optical data.

Finally, we will describe the opportunities and advantages of joint observations between ALMA and the soon-to-be-operational, four-meter DKI Solar Telescope (DKIST).”

Presenter: Dr GARY, Dale

Session Classification: Stellar Evolution