ARTN & WART ANALOGS YOUNG SOLAR ANALOGS

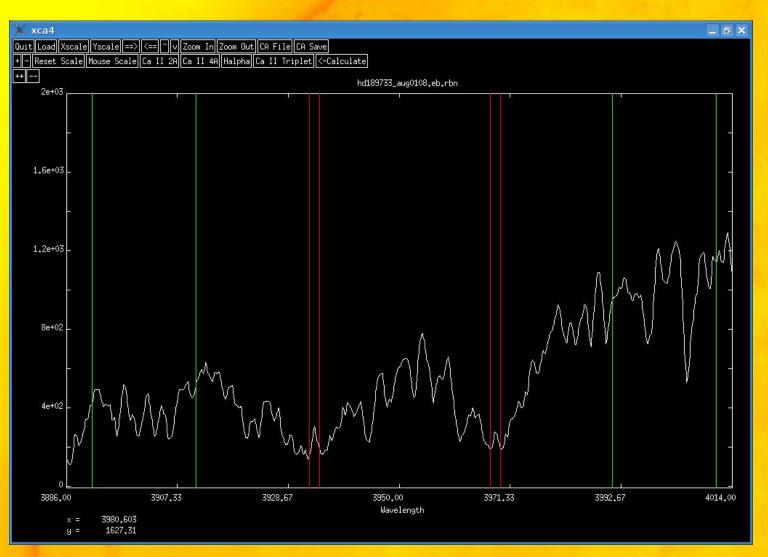
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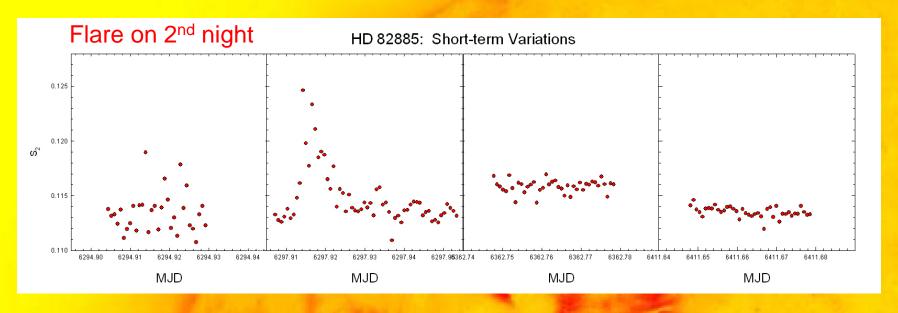
INTRODUCTION & MOTIVATION

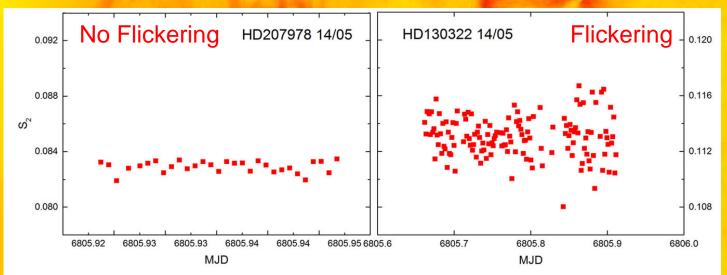
- The Young Solar Analogs (YSA) project at the ASU Dark Sky Observatory and VATT is a spin-off from the Nearby Stars (NStars) project. It started in 2007.
- The goal is to monitor chromospheric activity in a set of 31 *Hyades-aged* (0.3 – 1.5 Gyr) F8 – K2 dwarfs on time scales of a minute to decades.
- The motivation is to learn more about the nature of stellar activity in solar analogs at the epoch during which life first appeared on Earth.
- The earth-based observations are proxies for those from space.

For the VATT 0.75Å resolution, we measure the Ca II K & H flux with a 1Å bandpass, (S_1) and then transform to S_{MW} . DSO uses a 2Å bandpass (S_2) .

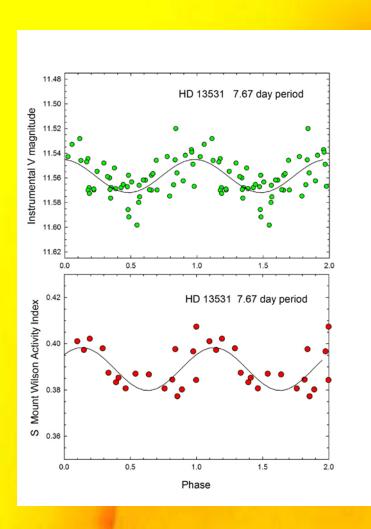


VATT 1-MIN CADENCE





PHOTOMETRY & INDICES



Phased data for V-band photometry (top) and SMW activity (bottom) for HD 13531. It is brightest at highest activity, opposite to the Sun.

Photospheric Indices: The same spectra used for the Ca H&K indices also contain the G-band, the Ca I resonance line (4227 Å), and the Hydrogen-gamma line. While primarily sensitive to temperature, the G-band also contains information on large-scale magnetic structures in the stellar photosphere.

ARTN'S POTENTIAL

Simultaneous monitoring

- VATTspec, 1200 I/mm grating, cadence 1 min
- 61-in with the Mont4K imager, same 1 min cadence, and Hydrogen-alpha filter

The addition of H-alpha very desirable since

- It is more sensitive to variations than H-gamma.
- The variations are due to more than temperature.
 Continuum emission and magnetic effects complicate the picture.

Pipeline desirable for alert to flares or unusual flickering.