

## **Turn down the noise! Disentangling planetary and stellar signals by observing the Sun with EXPRES**

Joe Llama  
Lowell Observatory

The signal induced by a temperate, terrestrial planet orbiting a Sun-like star is an order of magnitude smaller than the host stars' intrinsic variability. Understanding stellar activity is, therefore, a fundamental obstacle in confirming the smallest exoplanets

The EXtreme PREcision Spectrograph (EXPRES) has been obtaining EPRV measurements of stars to search for Earth-sized exoplanets since 2019. Recently, we integrated a solar feed into EXPRES to observe the Sun during the day in an analogous way to the stars at night. The Lowell Observatory Solar Telescope (LOST) is a 70-mm aperture lens that is fiber-fed into EXPRES. In clear conditions, the EXPRES solar observations have a cadence of approximately 300-s and single measurement uncertainty of just 35 cm/s.

Since first light in late 2020, we have obtained over 35,000 RV measurements of the Sun. In this presentation, I will present our first results including comparisons with other solar telescopes, comparisons with disk-resolved data from NASA's Solar Dynamics Observatory, and prospects for correcting the RV variability induced by stellar activity.