

Interferometric Images of Stellar Surfaces for Disentangling Extreme Precision Radial Velocities

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The inhomogeneities of a stellar surface contribute to radial velocity (RV) measurements and can hinder efforts to detect Earth-like planets. Even stars as quiet as the Sun have stellar activity and convection that can overwhelm the RV signal of a potentially habitable planet. Here, we demonstrate our novel technique using images of stellar surfaces and contemporaneous extreme precision RV data to better understand the contribution of the stellar surface to the RVs. We directly image the surfaces of Sunlike stars with interferometry from the MIRC-X beam combiner at the CHARA Array at Mount Wilson Observatory. These images are used to model the RV contribution of the stellar surface, which are then compared to contemporaneous radial velocities from the EXPRES spectrograph on the Lowell Discovery Telescope at Lowell Observatory. Here, we share the first interferometric images of Sunlike stars and our first results.