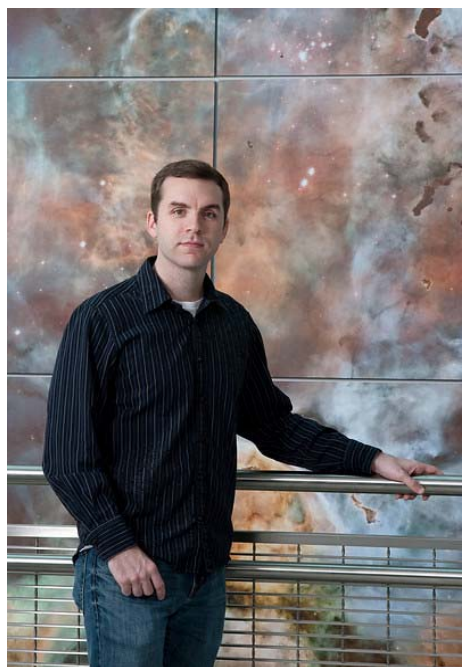


The University of Texas at San Antonio

# UTSA Physics and Astronomy



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***3:00 PM***

## **Directly Imaging Extrasolar Planets with Extreme Adaptive Optics**

The Subaru Coronagraphic Extreme Adaptive Optics (SCEXAO) project is an instrument on the Subaru telescope that is pushing the frontiers of what is possible with ground-based high-contrast imaging of extrasolar planets. In this talk, I describe key breakthroughs in SCEXAO's wavefront sensing and coronagraphy that yield extremely high Strehl ratio corrections and deep planet-to-star contrasts, even for optically faint stars. SCEXAO is coupled to a near-infrared integral field spectrograph -- CHARIS -- yielding robust planet spectral characterization. I describe our first full year of science results with SCEXAO, focusing on characterization of known exoplanetary systems -- kappa And and LkCa 15 -- and how these observations clarify the planet formation environment in these systems. Finally, I describe the technical path ahead for SCEXAO: how it will mature key technologies that could be used for future NASA flagship missions and carry out complementary/precursor science observations for missions like WFIRST-CGI and ground-based extremely large telescopes