

Abstract Submitted
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Methane Imaging Search for Planetary Mass Objects in Rho Ophiuchi¹ SHERENE HIGLEY, KARL E. HAISCH JR., Utah Valley University, MARY BARSONY, San Francisco State University, CHRIS TINNEY, University of New South Wales — T dwarfs are the coolest and least massive compact astrophysical objects that we can directly observe outside our Solar System. They share many properties with the expanding population of known exoplanets (almost all of which are inaccessible to direct observation themselves). An understanding of T dwarf atmospheres, therefore, is critical to our developing understanding of exoplanets. Moreover, T dwarf surveys in young star clusters can provide important answers to questions such as “Is there a minimum mass for star formation?” and “How important is dynamical evolution for cluster mass functions?” In recent years, methane imaging has emerged as a powerful tool for identifying T dwarf candidates in very young clusters, where T dwarfs are at their brightest and have not yet been subject to possible dynamical ejection from their clusters. We have recently conducted a methane imaging survey of the Rho Ophiuchi cluster for T dwarfs using the IRIS2 near-infrared imaging spectrograph on the Anglo-Australian Telescope. The Rho Ophiuchi cluster is the closest ($d \sim 120$ parsecs) star-forming region to Earth that has a compact core harboring several hundred young (~ 1 Myr) stellar objects. In this talk, we present the results of our imaging survey.

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Sherene Higley
Utah Valley University

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