Infrared Studies of Young Brown Dwarfs

Katelyn Allers
Institute for Astronomy - University of Hawai'i

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Abstract: Brown dwarfs (objects with masses too low to sustain hydrogen burning) are the bridge between planets and stars. Young brown dwarfs are particularly exciting as objects with masses in the range of extrasolar planets are within in reach of direct observations in the near and mid-infrared. These objects can provide a laboratory for detailed quantitative study in a context where light from a parent star does not mask the source properties of the planetary-mass object. In the past decade, young brown dwarfs have been found with increasing frequency, though planetary-mass brown dwarfs have remained largely elusive. Only a handful of potential planetary-mass brown dwarfs are known, but the intrinsic faintness of these objects and the uncertainty in evolutionary models makes determining their masses and ages very difficult. In this talk, I will describe two new and efficient methods for finding planetary-mass brown dwarfs. I will also discuss ways in which we can test evolutionary models of brown dwarfs using large spectroscopic databases and high resolution imaging.