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First brown dwarfs from the UKIRT Infrared Deep Sky Survey (UKIDSS)

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Abstract. On behalf of the UKIDSS consortium, we present the first brown dwarfs found in the UKIRT Infrared Deep Sky Survey(UKIDSS). UKIDSS began in May 2005 and will survey 7500 square degrees of the Northern sky, extending over both high and low Galactic latitudes, in JHK to K=18.3. This depth is three magnitudes deeper than 2MASS. UKIDSS searches for the nearest and smallest objects in the solar neighborhood. This survey is deep enough to detect brown dwarfs and young free floating planets with as little as 5 Jupiter masses with-in distance of few tens of parsecs. The UKIDSS should find brown dwarfs even cooler than T dwarfs, T_{eff} <700K, a new spectral class tentatively named Y dwarfs (Leggett et al 2005). The combination of IR and optical colors, and large expected proper motions, will allow the UKIDSS to find halo brown dwarfs if they exist, testing the universality of star formation processes, and the formation history of the Milky Way. The brown dwarf candidates were selected based on their YJHK colors. Follow-up photometry of the candidates presented here was done using the CTIO-4m Blanco telescope with ISPI. Follow up spectroscopy was obtained using the 4.2-m William Herschel telescope with LIRIS, and the 3.5-m Galileo telescope with DOLORES. The spectroscopy confirms 3 L Dwarfs and 1 T Dwarf among these candidates.

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