

**P222a SEEDS Direct Imaging Survey of Ursa Major Members**

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We report preliminary results of a direct imaging (DI) survey aimed at detecting low-mass companions around probable members of the Ursa Major (UMa) moving group, a nearby young stellar association ( $\sim 20$  pc,  $\sim 500$  Myr). The survey is part of the larger SEEDS project. The preliminary result presented here includes observations spanning from Sept. 2012 to May 2013. During this period, eleven probable members of the UMa group were observed in the H-band using ADI mode and exposure times between 19 to 61 min. The analysis is being conducted using the ACORNS-ADI pipeline for ADI and LOCI analysis (Locally Optimized Combination of Images), with a typical 5-sigma detection limit of  $\sim 17$  mag at  $1''$  and  $\sim 19.5$  mag for separations  $> 2''$ . For three targets a point source was detected with apparent magnitudes of 17.4 mag, 17.5 mag and 19.3 mag, respectively. Using thermal evolution models and the UMa groups age, two of the three appear to be in the BD mass range ( $\sim 25 M_J$ ) and one in the Giant Planet regime at  $\sim 10 M_J$ . All three show large separations from the central star ( $> 7''$ ). Following the survey of the 100 pc distant, 100 Myr old Pleiades open cluster (Yamamoto et al. 2013 and talk), the closer UMa group presents a chance to probe for planets with smaller separations at a well constrained age. We refine statistics of recent DI surveys which showed planetary companions with large separation to be rare. Assuming typical detection limits, non-detection with the expected  $\sim 20$  target sample implies planets between 9-12  $M_J$  with separations of 40-150 AU exist around  $\sim 38.2\%$  of stars at most.