

## Multiplicity Study of Exoplanet Host Stars: The HD 3651 AB System

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We present new results from our ongoing multiplicity study of exoplanet host stars. We found new stellar companions of the exoplanet host stars GJ 3021 and HD 40979 and present our imaging and spectroscopic data of the wide companion of the exoplanet host star HD 27442. GJ 3021 is a new close planet hosting binary system with a M3–M5 stellar companion ( $\sim 0.125 M_{\odot}$ ) which is separated from its primary by only 70 AU. In contrast, HD 40979 is one of the widest planet hosting stellar systems known today with a projected separation of  $\sim 6400$  AU. We present our observations of the wide companion HD 40979B, which turned out to be a stellar pair composed of a  $\sim 0.8 M_{\odot}$  and a  $\sim 0.4 M_{\odot}$  dwarf with a projected separation of  $\sim 130$  AU. Hence, HD 40979 is a new member of the small group of planet hosting triple star systems known today. Finally, we present our observations of the planet hosting subgiant HD 27442, which has a co-moving companion with a projected separation of  $\sim 240$  AU. The *V*- and *H*-band magnitudes of this faint companion are fully consistent with a relatively young, hot white dwarf, with an effective temperature of  $\sim 14400$  K, and cooling age of  $\sim 220$  Myr. With follow-up spectroscopy which shows Hydrogen absorption features in its optical and infrared spectra, we confirm the white dwarf nature of this companion. With the subgiant exoplanet host star and its white-dwarf companion, HD 27442AB is the most evolved planet hosting stellar system presently known.

## Preliminary Orbit and Masses of the Nearby Binary L Dwarf GJ 1001BC

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We present preliminary results of a continuing VLT program to map the orbit of the nearby binary L4.5 dwarf GJ 1001BC (LHS 102BC). Since discovering its duplicity in 2002 and 2003 using HST's NICMOS and ACS, we have obtained high-resolution images of GJ 1001BC at three epochs between October 2004 and November 2005, using the NAOS/CONICA system at VLT-UT4 (Yepun). Our HST and VLT images cover  $\sim 75\%$  of GJ 1001BC's 4-year orbit. A least-squares fit of a Keplerian orbit yields a combined binary mass of  $0.100 \pm 0.026 M_{\odot}$  for a tentative parallactic distance measurement of  $13.0 \pm 0.7$  pc to the M dwarf GJ 1001A. Hypothetically assuming a 3:2 mass ratio for the nearly equal-luminosity L dwarfs, we estimate masses of  $0.060 \pm 0.016 M_{\odot}$  and  $0.040 \pm 0.010 M_{\odot}$  for GJ 1001B and C, respectively. If these preliminary values are sustained by our continuing orbit and parallax measurements, then GJ 1001C will be the least massive L dwarf for which a dynamical mass has been measured.