Stellar mass is emerging as one of the most important parameters in determining the properties of planetary systems, along with stellar metallicity. Radial velocity surveys have indicated that the frequency of giant planets increases with the mass of the stellar host [1], and many of the roughly dozen exoplanets that have been directly imaged so far have had A-type stellar hosts [2,3], despite such large stars being in the small minority of surveyed targets. The increase in planet frequency with host star mass can be readily explained theoretically, through the consideration that more massive stars are likely to have more massive disks [4]. On the other hand, massive stars also feature an increased intensity of high-energy radiation, which may significantly shorten the disk lifetime due to photo evaporation, and thus decrease the time window in which giant planets are allowed to form. This raises the question whether there is a maximum stellar mass above which giant planets are unable to form.

We present the direct imaging discovery of an extrasolar planet, or possible low-mass brown dwarf, at a projected separation of 55±2 AU (1.″058±0.″007) from the B9-type star κ And [5]. The planet was detected with Subaru/HiCIAO during the SEEDS survey, and confirmed as a bound companion via common proper motion measurements. Observed near-infrared magnitudes of $J = 16.3±0.3$, $H = 15.2±0.2$, $K_S = 14.6±0.4$, and $L' = 13.12±0.09$ indicate a temperature of $~1700$ K. The host star is a member of the Columba association, implying a corresponding age of 30+20 Myr. The system age, combined with the companion photometry, points to a model-dependent companion mass $\sim 12.8 M_{\text{Jup}}$. The host star’s estimated mass of 2.4–2.5 $M_{\odot}$ places it among the most massive stars ever known to harbor an extrasolar planet or low-mass brown dwarf. While the mass of the companion is close to the deuterium burning limit, its mass ratio, orbital separation, and likely planet-like formation scenario imply that it may be best defined as a ‘Super-Jupiter’ with properties similar to other recently discovered companions to massive stars radial velocity surveys.

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**References**