

P225a **Recovery of the Candidate Protoplanet HD 100546 b and Detection of Additional Disk Structures**

Thayne Currie (NAOJ), 武藤恭之 (工学院大学), 工藤智幸 (国立天文台), 本田充彦 (神奈川大学), Timothy D. Brandt (IAS), Carol Grady (Eureka Scientific), 深川美里 (大阪大学), 他 SEEDS/HiCIAO/AO188 チーム

We report the second-epoch re-detection of a directly-imaged protoplanet candidate HD 100546 b. Using Near-Infrared Coronagraph and Imager (NICI) on Gemini South, we obtain the  $L'$  image of HD 100546. The position and brightness of the candidate planet is consistent with the original detection by Quanz et al. (2013). We find that HD 100546 b is likely to be spatially resolved ( $\sim 12$ -13 AU in diameter) and is embedded in a finger of thermal IR bright, polarized emission (c.f.,  $L'$ -band PDI observations by Avenhaus et al. 2014). Hot-start models imply a mass of  $15 M_J$ , but if it is newly formed or embedded in a circumplanetary disk, its mass can be much lower. In addition, we discover, for the first time, a thermal IR-bright (in  $L'$ -band), spiral-like disk feature at 90 degrees away from the candidate planet. Our spiral density wave model indicates that a wave-launching point reside exterior to  $\sim 0.45$  asec, possibly indicating the existence of another unseen planet. Given the coexistence of a planet and disk features, HD 100546 may serve as an important evolutionary precursor to intermediate-mass stars with multiple wide separation planets like HR 8799 system.