

Name: Gerard van Belle
Email: gerard@lowell.edu
Institution: Lowell Observatory
Title: DSSI at DCT: Superearth Validation with High-Resolution Speckle Interferometry
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Abstract: We will be bringing the Differential Speckle Survey Instrument (DSSI), a speckle camera, to Lowell Observatory's 4.3-m Discovery Channel Telescope (DCT) in March of 2014. DSSI will be employed in high-angular resolution work for the Kepler Follow-up Program; at the shortest wavelengths of operation (370nm), DSSI@DCT will have a limiting resolution of 22 milliarcseconds (mas). DSSI has already been on sky in this capacity with WIYN and Gemini-N, detecting faint nearby companions to KOIs. For the brighter KOIs (mag~10-12), we expect a companion detection limit of $\Delta_m=5.5$ at 200mas separations, which degrades linearly between mag~12-15.5 to $\Delta_m=3.0$. Guaranteed access to DCT will enable us to perform a complete census of exoplanet validation for the ~600 Kepler stars thought to be hosting one or more super-earth-sized ($>2.5R_{\text{Earth}}$) planetary candidates. Additional applications of DSSI@DCT include diameters, shape measures, and crude surface maps of the largest stars and solar system asteroids.

Co-authors

Elliott Horch (DSSI PI), Southern Connecticut State University
Steve Howell, NASA Ames
David Ciardi, Caltech
Mark Everett, NOAO