Name: Gibor Basri
Email: basri@berkeley.edu
Institution: UC Berkeley
Title: Stellar Gravity Measured by Photometric "Flicker"
Type: Contributed Talk
Session: Stellar Activity, Rotation, Ages, Metallicity
Abstract: A new methodology for determining stellar gravities from long cadence Kepler light curves was announced by the authors this summer (Nature, v. 500, p. 427). The amplitude of random photometric variability on timescales shorter than about 8 hours (dubbed "flicker") is found to correlate with stellar gravity. This relation was found by comparison with asteroseismic gravities, and is more accurate than spectroscopic gravities. It holds for FGK stars which do not have unusually high total photometric variability. The basic explanation offered is that granulation and stellar rotation both change with stellar gravity, especially as stars evolve off the main sequence. Since that preliminary work we have been testing the extent to which this new method can be extended to a larger temperature range, higher gravities, and more active stars. We compare a larger calibration set containing both asteroseismic and spectroscopic gravities. We find a double-valued region of the flicker-gravity diagram at low gravity (supergiants can resemble active dwarfs); this can be resolved by additional information contained within the light curves. We are also determining the region where Kepler data is not useful for the flicker method - when stars are too faint the flicker is overwhelmed by photon noise. Finally, we say something about the application of this method to KOIs, for which it can refine the stellar (and thus planetary) radii.