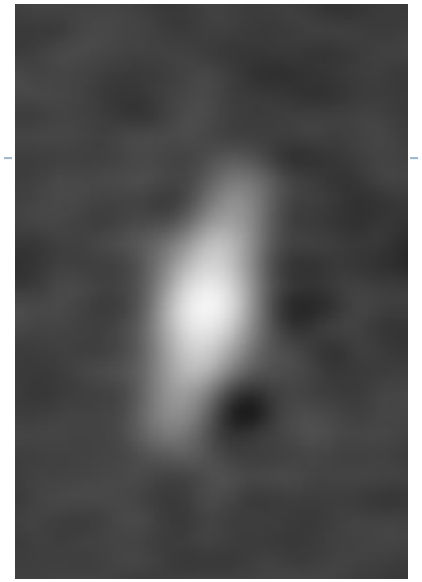
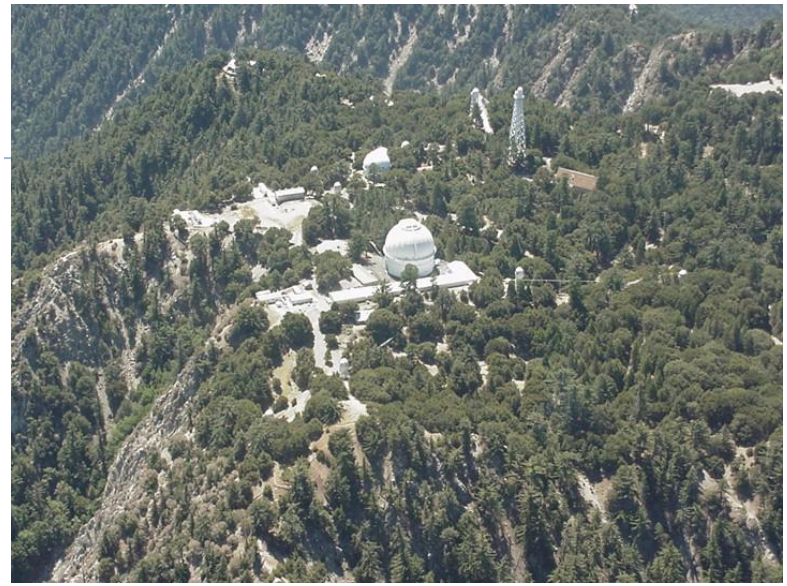




Time-Domain Discussion Group: Optical Interferometery

Gerard van Belle (Lowell),
with Theo ten Brummelaar (CHARA/GSU) and Michelle Creech-Eakman (MROI)

Small-Aperture Time-Domain

- Many 'mini-LSSTs' currently happening

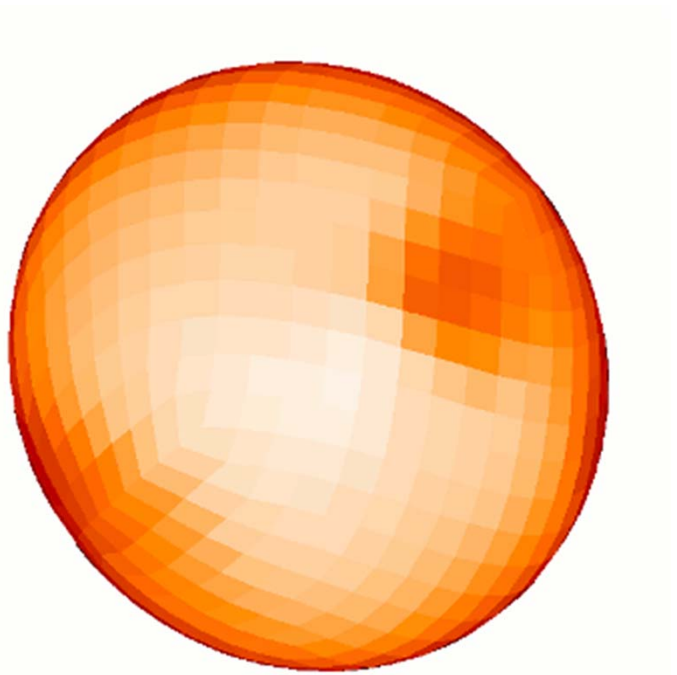
- Planet transit facilities: WASP, TESS, PLATO, etc.
- More general: PTF/ZTF, ATLAS, Pan-STARRS, LCOGT, ASAS, Evryscope, etc.
- Secondary: Gaia

Significant Need for Ancillary Data

- Small aperture = Detailed follow-up possible
  - Astronomy (discovery) versus astrophysics (characterization) versus
- Small aperture = Big pixels
  - High-resolution follow-up a must

At High Resolution, the Universe Moves

- Image of zet And (right) built up over ~18d
- Similar movies for binary stars



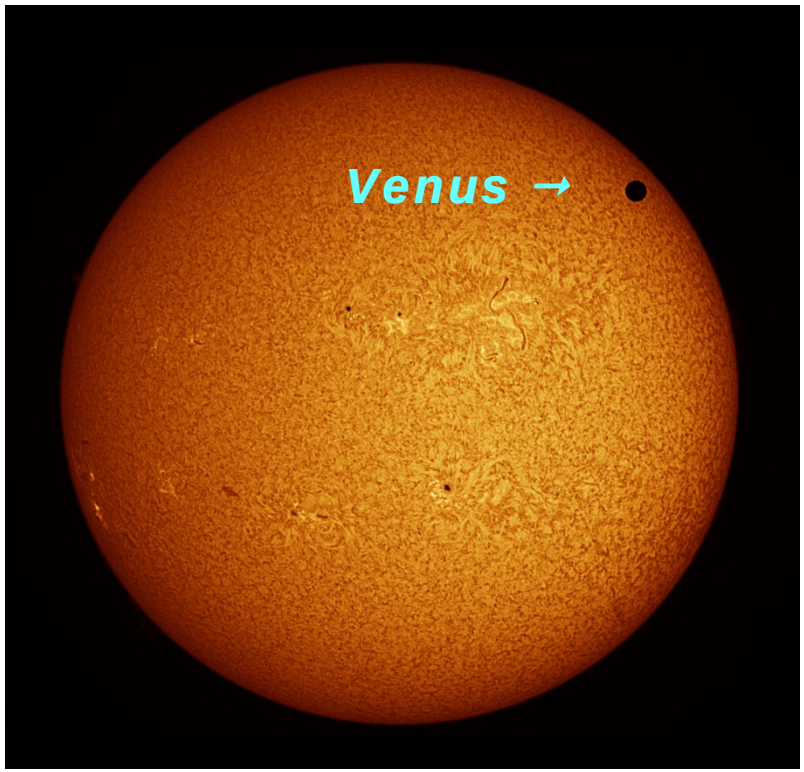
zet And - Rottenbacher et al. 2016

Needed Ancillary Data Products

- Spectroscopy, spectrophotometry
  - Both static & time-domain
- High-resolution imaging
  - Disentangle confusion
  - Capitalize on time-domain 'finderscope' aspect
- Additional techniques
  - Polarimetry, etc.
  - Capitalizes on return from 'small' apertures

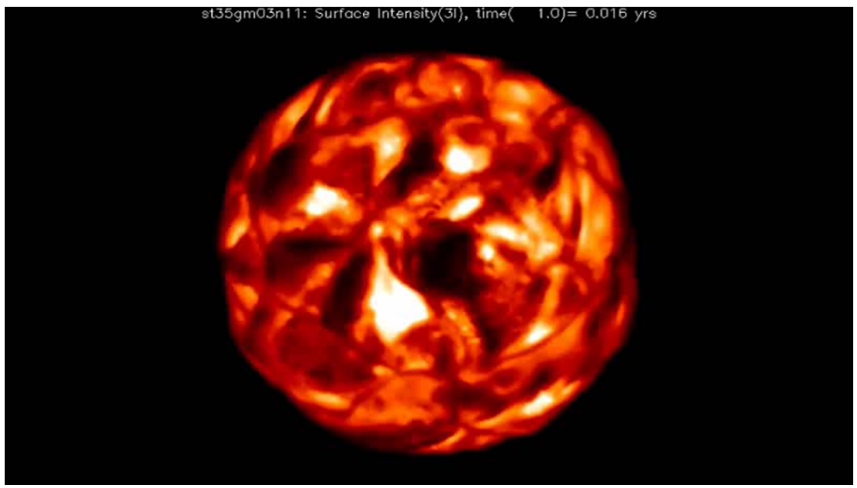
Imaging Exoplanet Transits

- NPOI, other facilities CHARA can observe exoplanet transits
- Planet's shadow is 'perfect' star spot
- λ-specific observations → atmospheric composition
- Extreme challenge: needs very high signal-to-noise



- Time-domain astronomy will discover objects of substantial interest:

  Let's be ready to follow up!



Freytag et al. 2002, 2008;
Chiavassa et al. 2009, 2010, 2011