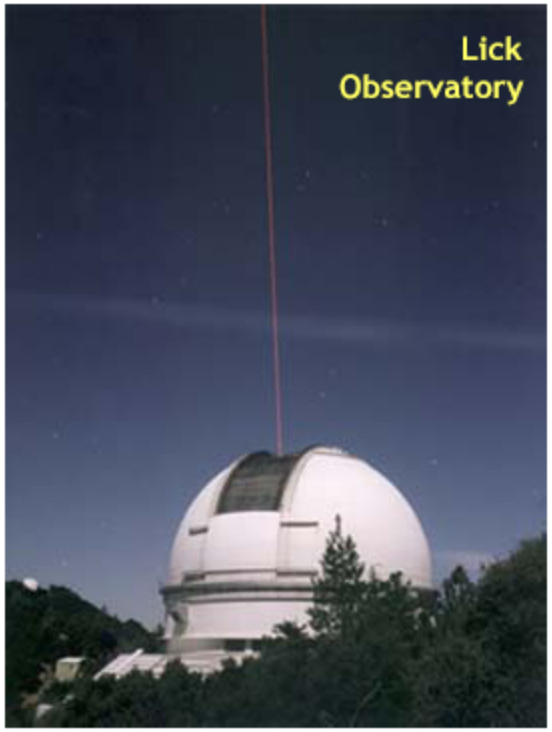
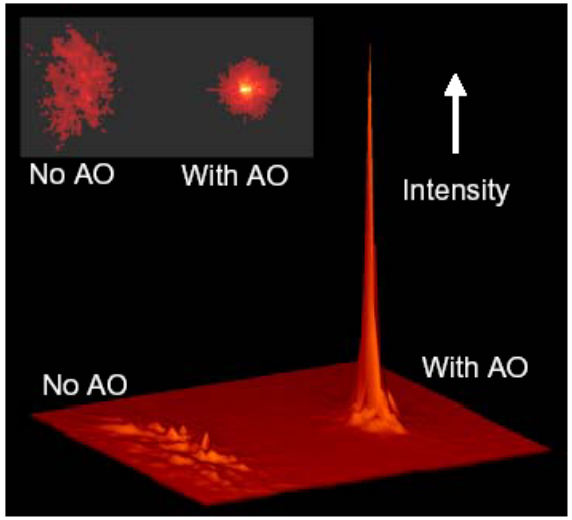
Goals for Theme 2: AO on ELT's

- Develop at least one workable point design for multiconjugate AO (MCAO) on a 30-m telescope
- Develop partnerships to co-fund hardware technology development for key components, including lasers
- Develop techniques for doing quantitative astronomy with laser guide stars
- Pursue astronomical science related to AO on 30-m telescopes

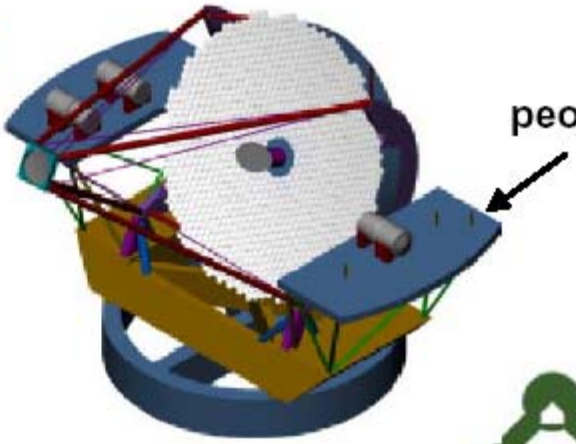




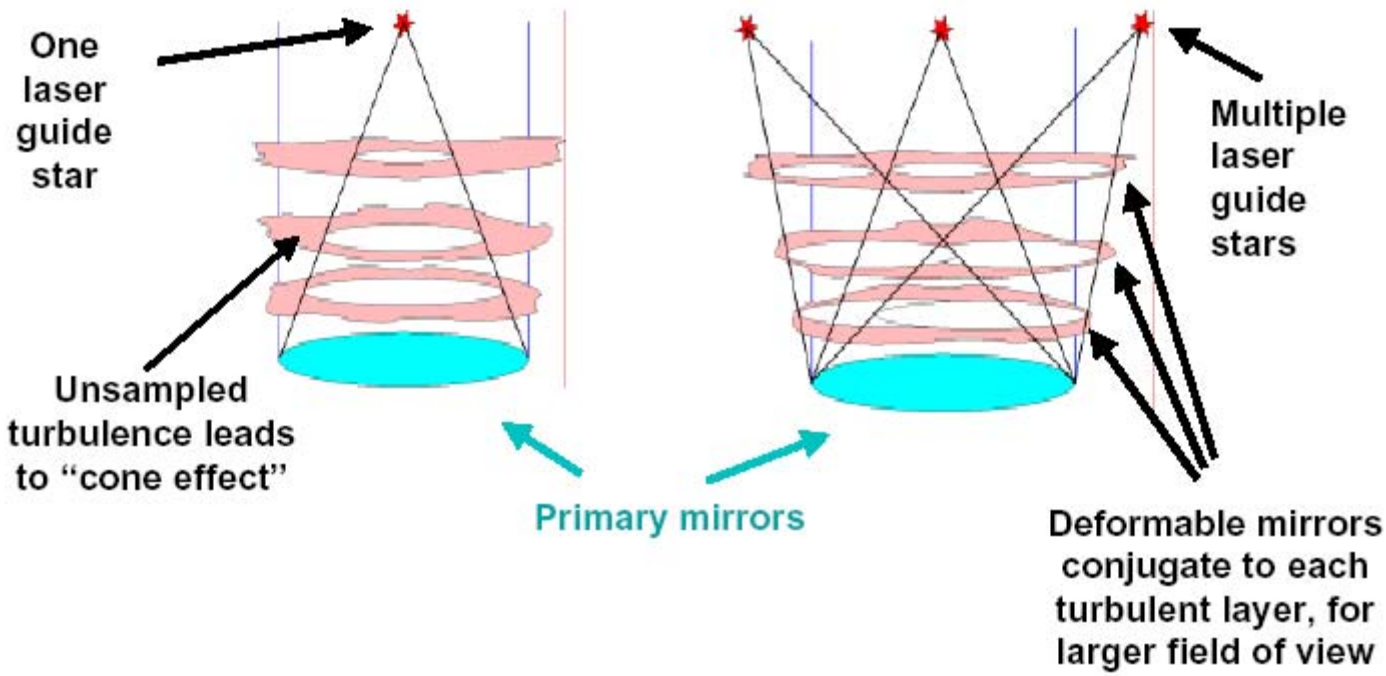
Lick Observatory AO system

Example: CELT
California Extremely Large Telescope

- 30-m segmented mirror telescope with adaptive optics
- University of California and Caltech initiative
- Compare telescope structure with baseball diamond:



Extremely Large Telescopes: Why is AO Different?



Developing ELT Technology

- Laboratory for Adaptive Optics (LAO) at UCSC building an MCAO testbed
- LAO founded to:
  1. support TMT testbeds
  2. Train UCSC graduate students in optics and electronics
  3. Provide resources to build and test future instruments

Goals for Maui Partnerships

- Interact with Maui industries and provide resources for growth
- Encourage undergraduates (local community colleges) to attend graduate school: Provide short-term projects, write letters of recommendation, etc.
- Tie into existing programs that train students for future careers in science and engineering

**Helping increase talent pool size and diversity is an INVESTMENT in the FUTURE of ELT's

Adaptive Optics Demonstrator

The LAO at Santa Cruz has constructed an educational AO system for demonstration purposes.

Maui Community College has been funded by the CfAO to construct another AO Demonstrator (Mark Hoffman)

- System will be constructed by a MCC undergraduate (Joe Curamen) for special credit.

Overarching goals:

- **Train students in optical design and engineering**

- **Use a system similar to those found in ELT's (in concept)**

- **Avoid black-box educational tools – all components are visible, removable, and relatively cheap**