

# Thirty-Meter Telescope: TMT

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Photo from Hawaii's Big Island Visitor Bureau

# TMT and the NSF

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## **“Planning a Partnership Model for a Giant Segmented Mirror Telescope (GSMT)”**

Cooperative Agreement established as a result of TMT response to NSF-AST solicitation

**“The primary deliverable of this award is to be a partnership model that might allow NSF to join the TMT Project on behalf of the US astronomical community.”**

# Cooperative Agreement Activities

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- **US TMT Science Working Group** will be established in partnership with NOAO
- US community representation on the **TMT Science Advisory Committee** and **TMT Collaborative Board**
- Annual **townhall meetings/workshops**
- Annual **TMT Forum**

**Goal is to give the US community a voice in defining the TMT Observatory and defining potential NSF role in construction and operation of the project.**

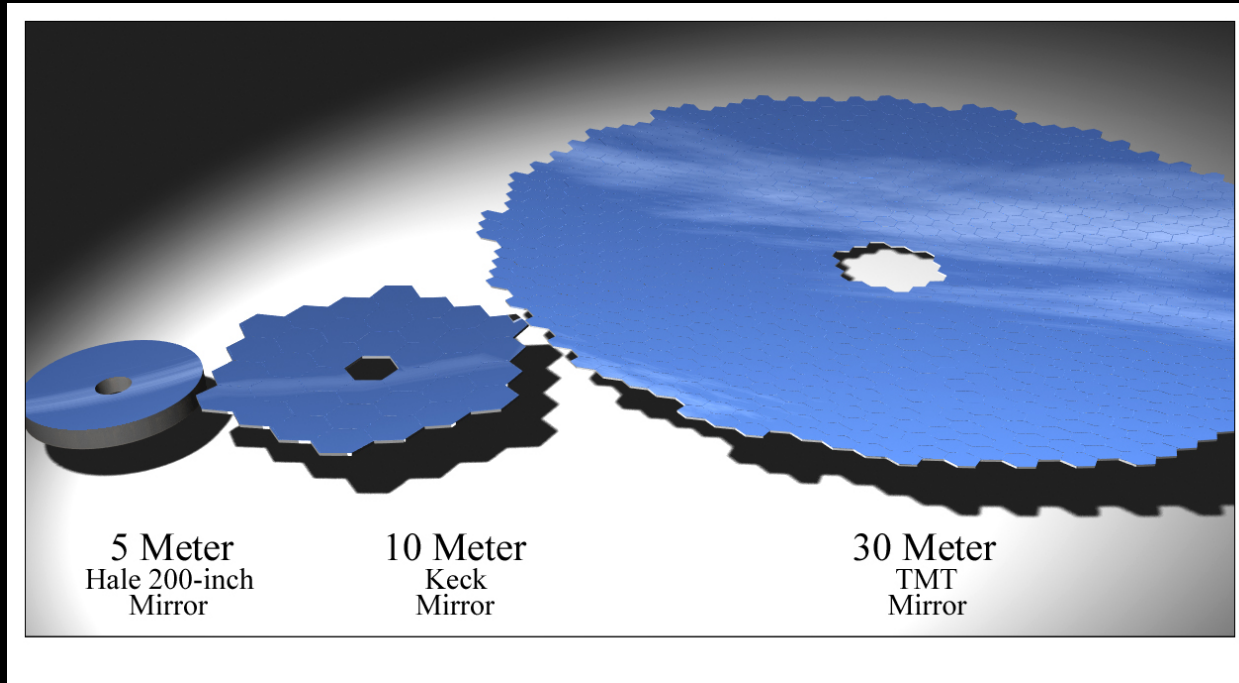
# How can members of the community participate?

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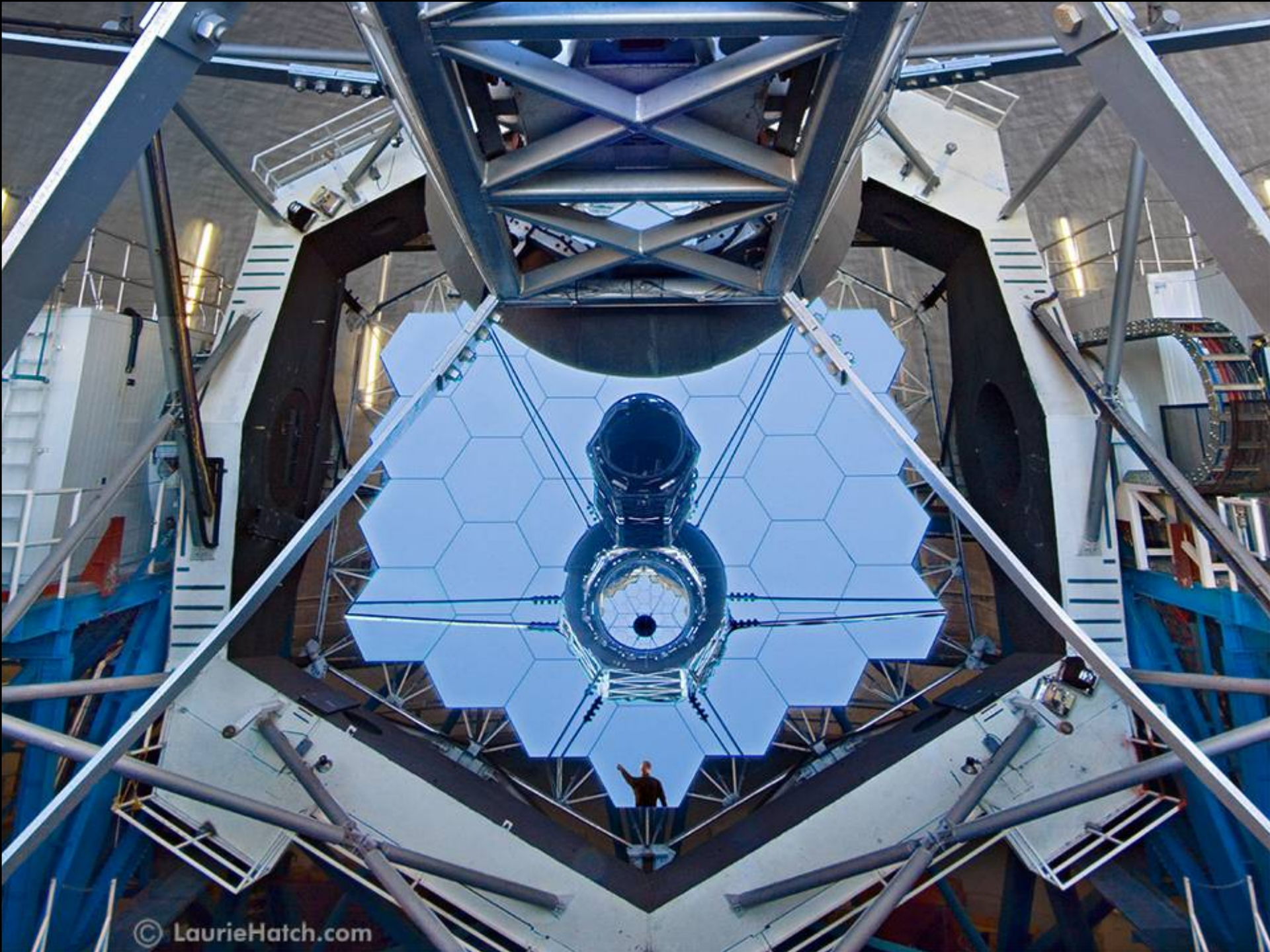
- Become a **member** of the **US TMT Science Working Group** (and perhaps a member of the **TMT SAC**)
- Attend the annual **TMT Forum** as a US community member
- **Request a visit to your department/regional meeting** to present and discuss the TMT project and US community involvement
- Indicate your interest (via future announcements) in **participating in the development of instrumentation** for TMT
- **Provide input** through community-wide solicitations about TMT science, TMT instrumentation, and TMT operations.

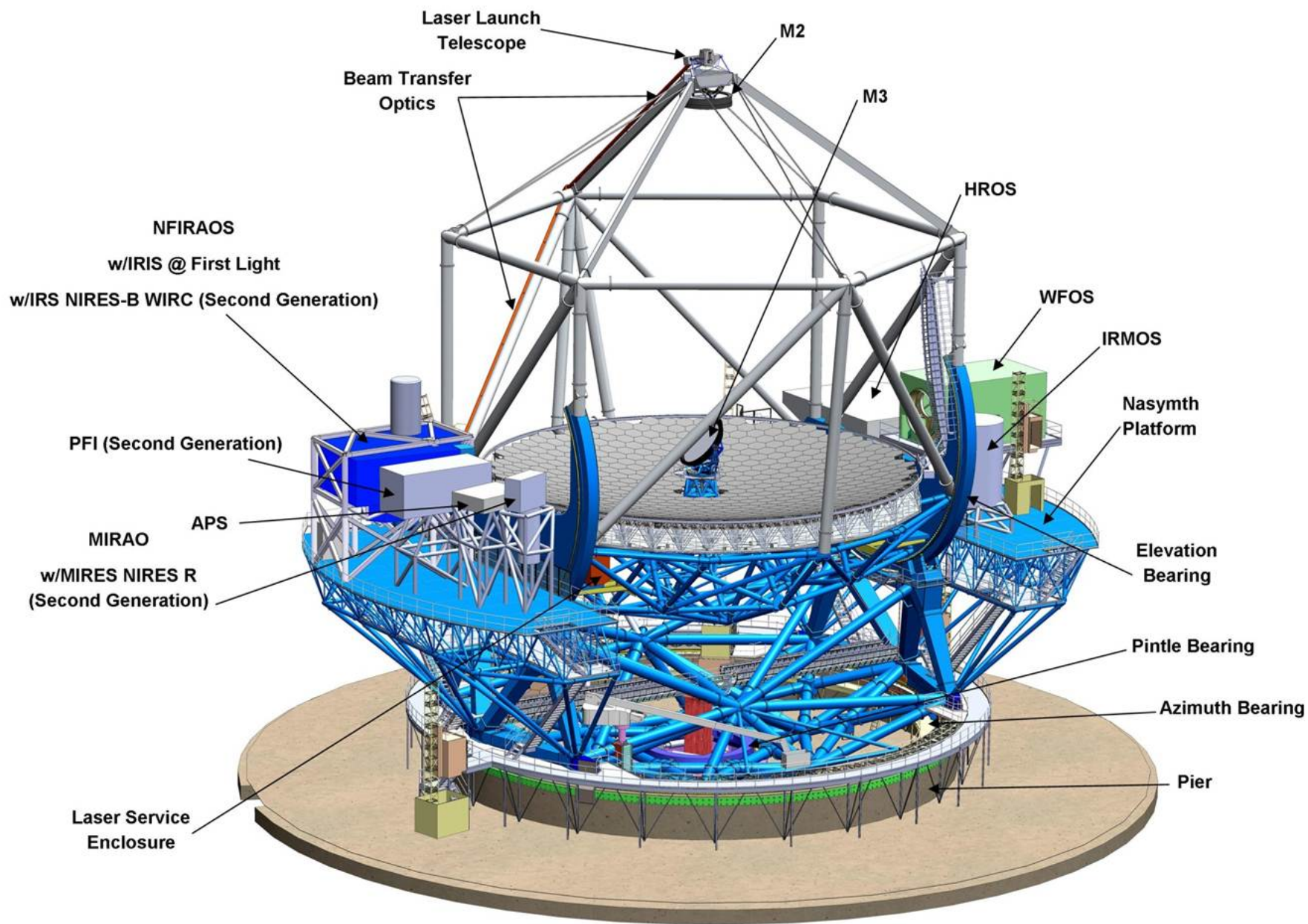
**Indicate your interest by contacting Todd Boroson ([tboroson@noao.edu](mailto:tboroson@noao.edu)) at NOAO, who is establishing a US TMT Liaison office.**

# Thirty Meter Telescope (TMT)



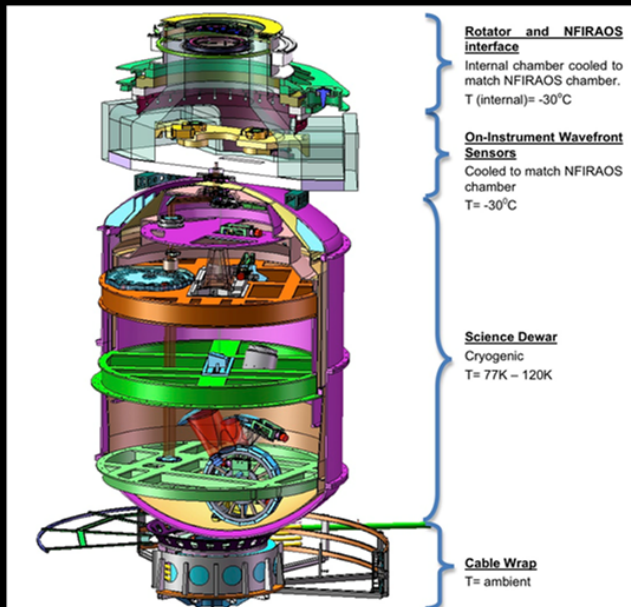
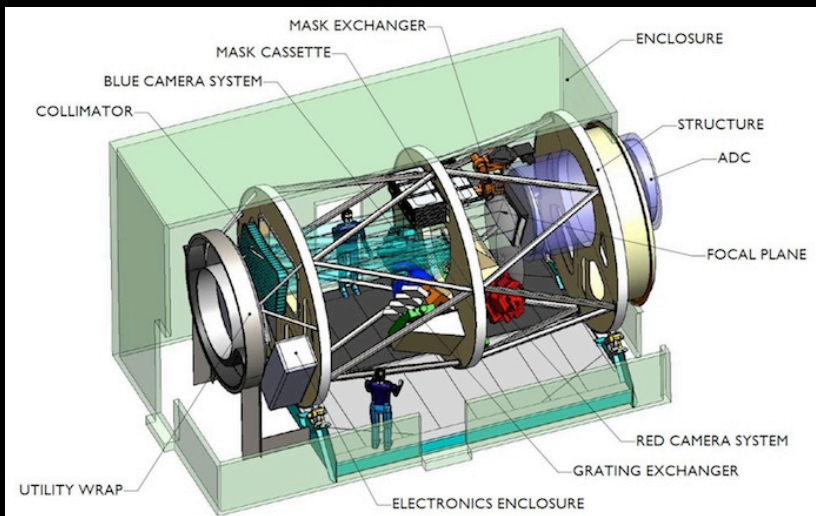
Nine times the light collecting area of a Keck 10-m Telescope  
Twelve times higher spatial resolution than the Hubble Space  
Telescope for wavelengths where AO can achieve diffraction  
limit of the primary mirror





# First Generation Instrument designs underway

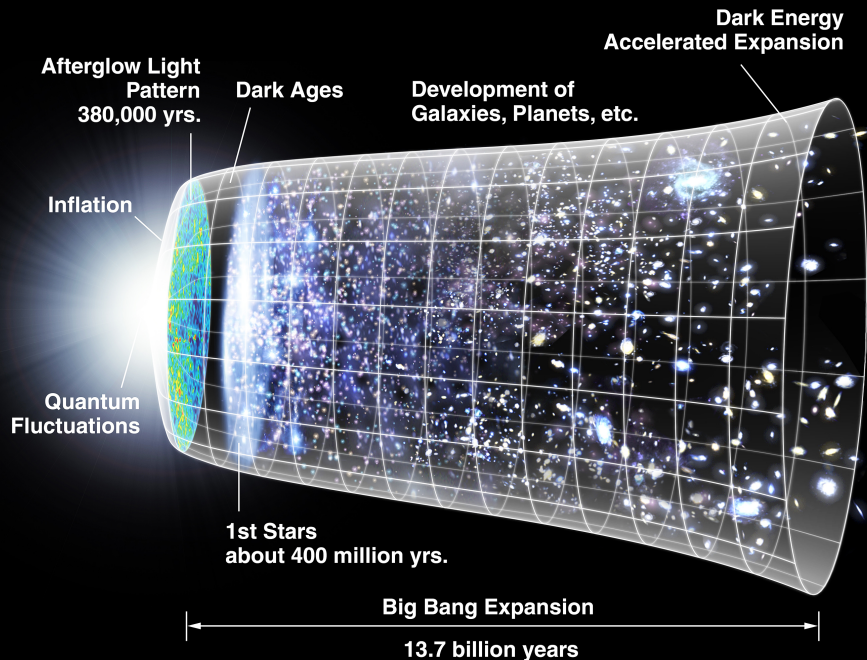
- **MOBIE** (Wide-field optical spectrometer) PI: R. Bernstein
- **IRIS** (AO-fed spectrometer and imager) PI: J. Larkin
- **IRMS** (Keck MOSFIRE clone)
- **NFIRAOS** 180nm WE AO system (HIA)



Instrument designs are large, expensive and individual subsystems are comparable in scope to instruments for 4-8m telescopes. Instruments will be designed and built through collaborations

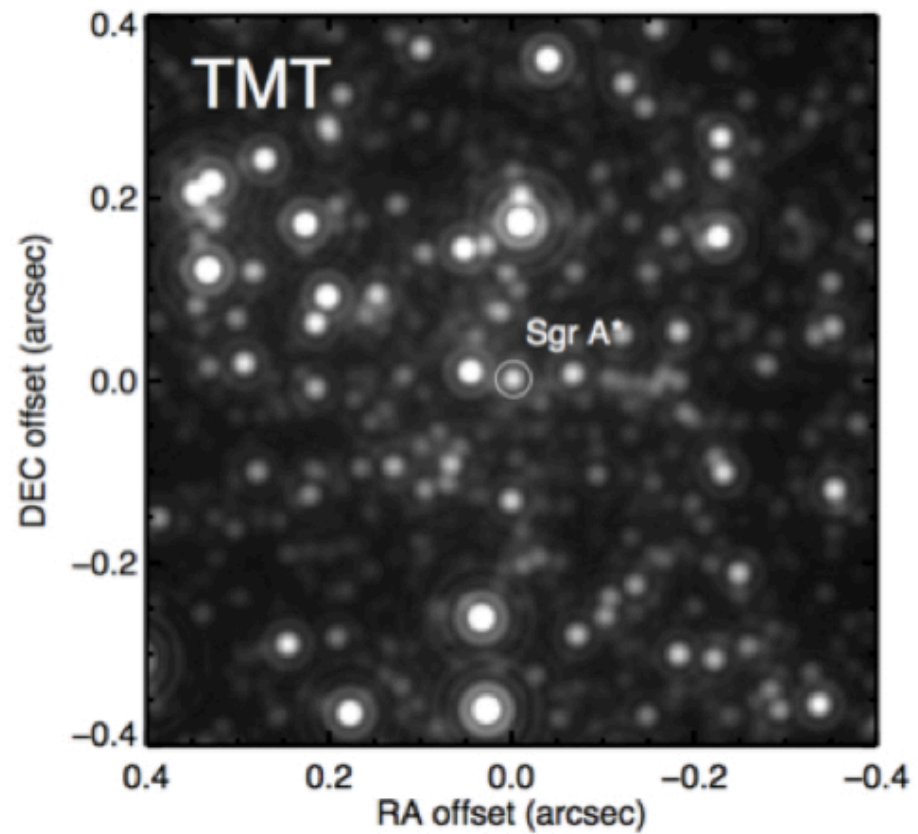
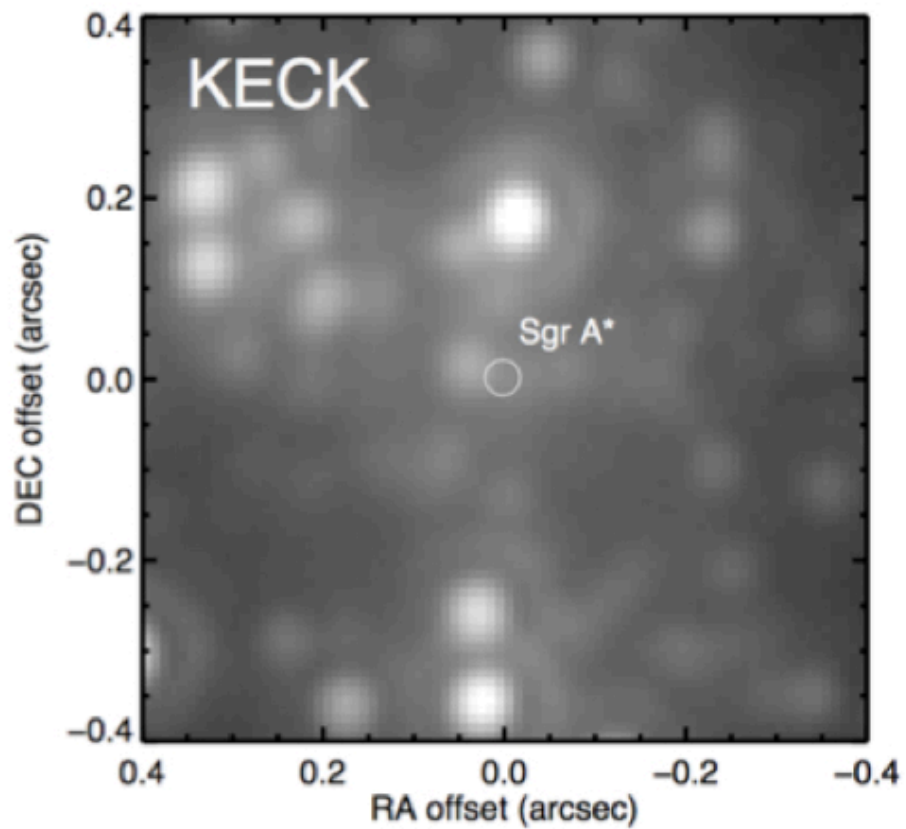


# TMT Science



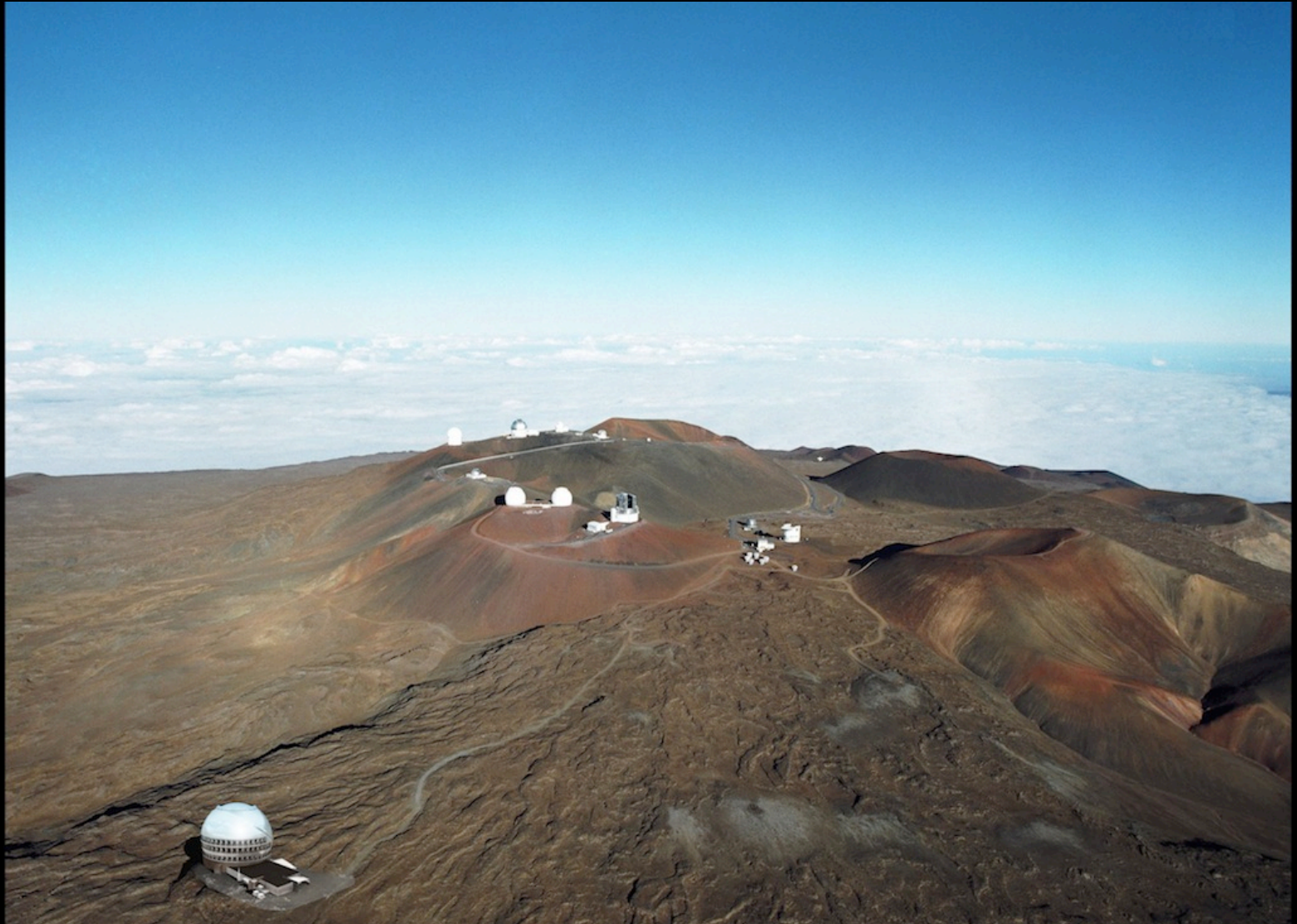
TMT light gathering power and very high spatial resolution will revolutionize studies in the areas of:

- the first epoch of star formation in the Universe
- the assembly and evolution of galaxies
- the discovery and characterization of extra solar planets
- New discovery space



# Site: Mauna Kea

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# Mauna Kea

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Very stable atmosphere above the site

- Excellent image sharpness
- Leads to excellent adaptive optics correction
- High site: low water vapor, low UV extinction



# TMT

30 m 望遠鏡

三十米望远镜

तीस मीटर दूरबीन

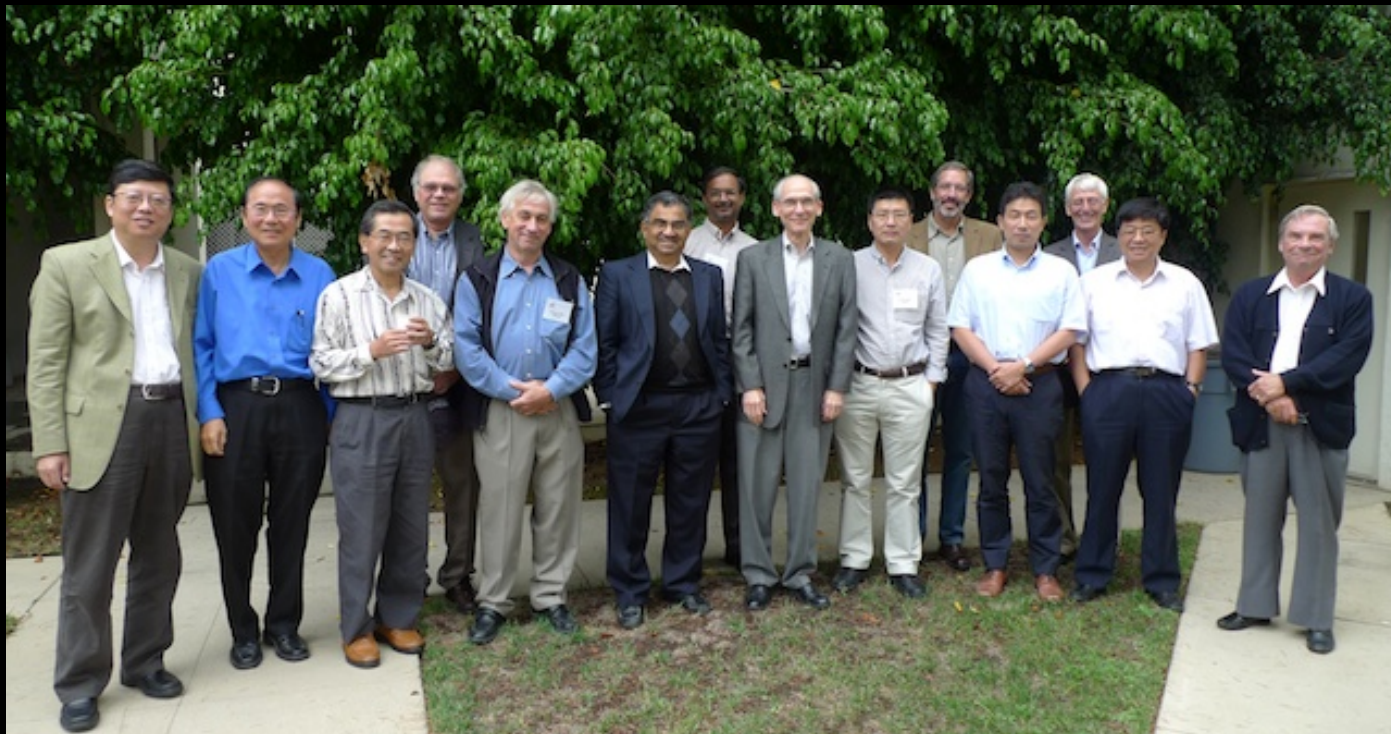
Thirty Meter Telescope

Télescope de Trente Mètres

- **University of California** and **Caltech** participation via major gift from the **Gordon and Betty Moore Foundation**
- **ACURA (Canada)** has been a partner since 2004
- **China, India** and **Japan** have been scientific and technical partners since 2007/8

# International Partnership

- Completing the TMT international partnership is a major activity
  - Legal agreements and corporate structure
  - Some partners are preparing construction proposals in 2013 for a 2014 start
  - **NSF is undertaking a program to explore partnership in the project**





<http://www.tmt.org/>