ASTR 555 Feb 22 2018





## Deep imaging with conventional telescope



#### **Not galaxy light!** Optical "ghosts" from nucleus

#### 3.6m Canada France Hawaii Telescope



Duc et al 2015







- Single lens is f/2.8
- Can increase aperture and decrease focal ratio further by adding lenses!



#### At New Mexico Skies











#### The Dragonfly Telephoto Array



- Dragonfly now has 2x24 lenses
- Effectively a 1.0m f/0.4 refractor
- 2x3 degree field of view
- 2.9" pixels

- Located at New Mexico Skies (near Cloudcroft)
- Fully robotic operates every clear night







Russell Porter drawing of 200 inch



# **GMT** Design

36 meters high 25.3 meters across

Alt-Az structure ~1000 tons moving mass

Primary mirror (f/0.7)

7 segments 8.4 meters each Cast borosilicate honeycomb Segments position controlled to ~10 μm

#### 3.2-m segmented secondary mirror corrects for PM position errors deformable mirror for adaptive optics

Instruments mount below primary at the Gregorian focus











A Schematic Diagram of a Slit Spectrograph







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## Hydra on WIYN: fiber positioner





