Lightbucket Telescopes

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Bruce Holenstein

Reed and Chris Estrada

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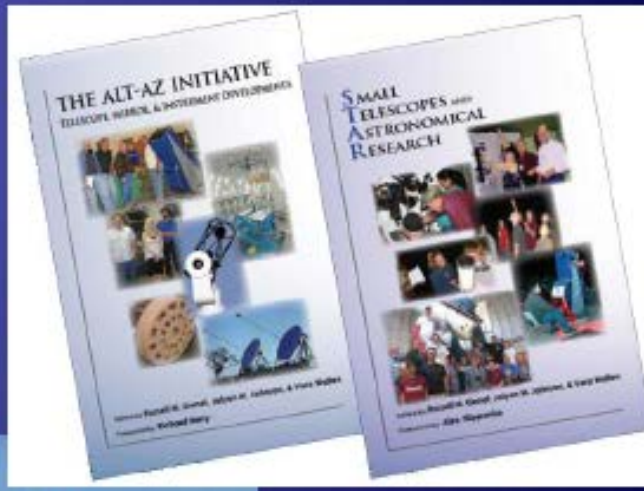
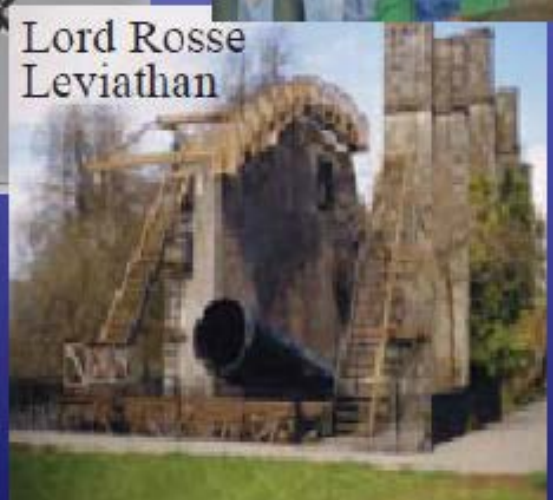
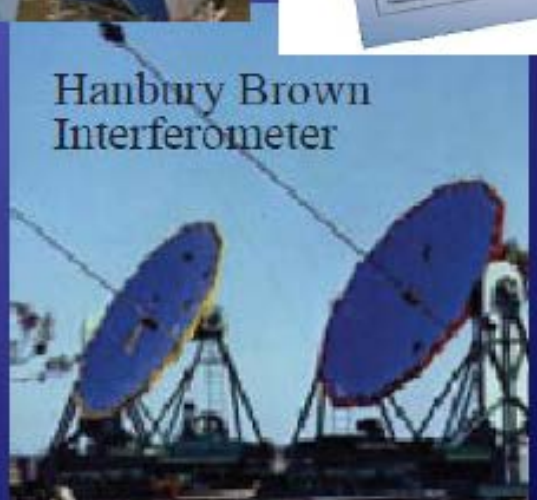
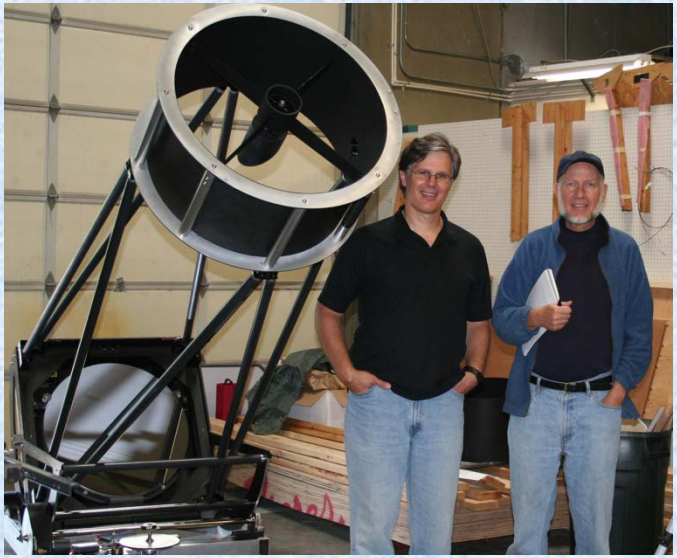
The Alt-Az Initiative

- Mirrors, Telescopes, Instruments, & Research Programs

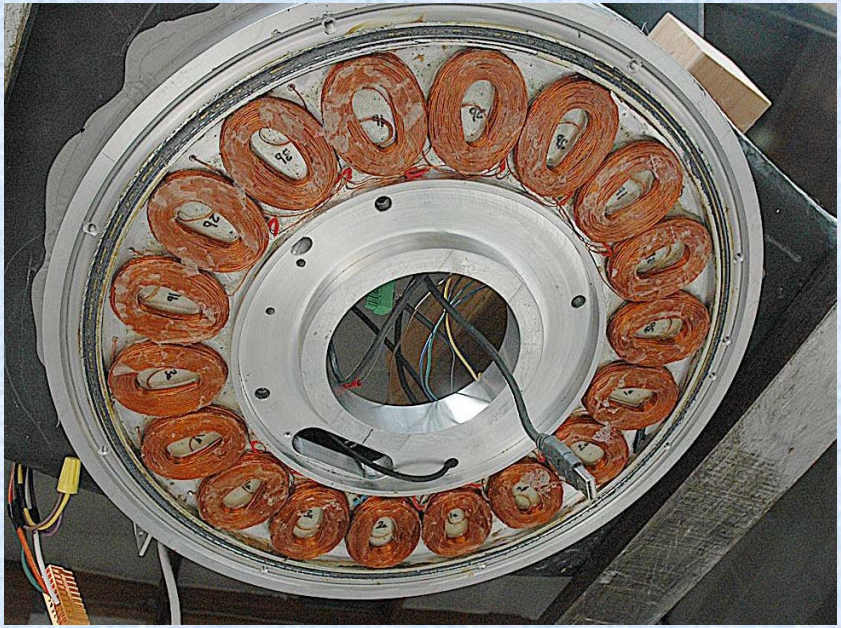









Alt-Az Telescope
Initiative
www.altazinitiative.com



What is a Light Bucket?

- **Light bucket** - *A colloquial expression for a flux collector.*
- **Flux collector** - *A telescope designed solely to collect radiation in order to measure its intensity or to carry out spectral analysis. No attempt is made to form an image so a flux collector can have a more crudely figured reflective surface than a conventional telescope.*

Mitton (2001)

Light Bucket Astronomy Regions of Excellence

- Signal-to-Noise-Ratio Advantage
  - Noise contributed by the sky background a small or nearly negligible source of noise
  - Bright objects
  - Short integration times
  - Narrow bandwidths
  - High detector noise

Light Bucket Astronomy Research Interests

- Occultations
- Stellar Intensity Interferometry
- High-precision & NIR photometry
- Spectroscopy
- Polarimetry
- And many other astronomical areas…

Lightweight low cost mirrors

The key to economical photons

Slumped Meniscus Mirrors

Gemini 8-m meniscus mirror

Mel Bartle's 13" soda lime slumped meniscus mirror

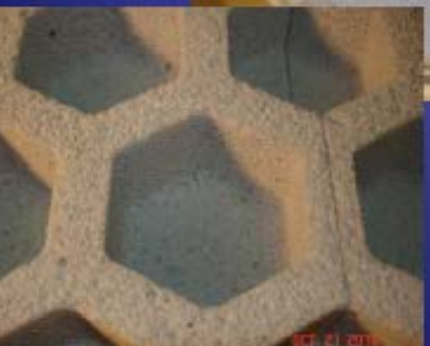
French ATM with 1-m meniscus mirror and astatic support system

Sandwich

- Tong Liu from Hubble Optics

Foam Glass

- Andrew Aurigema from OTF Designs

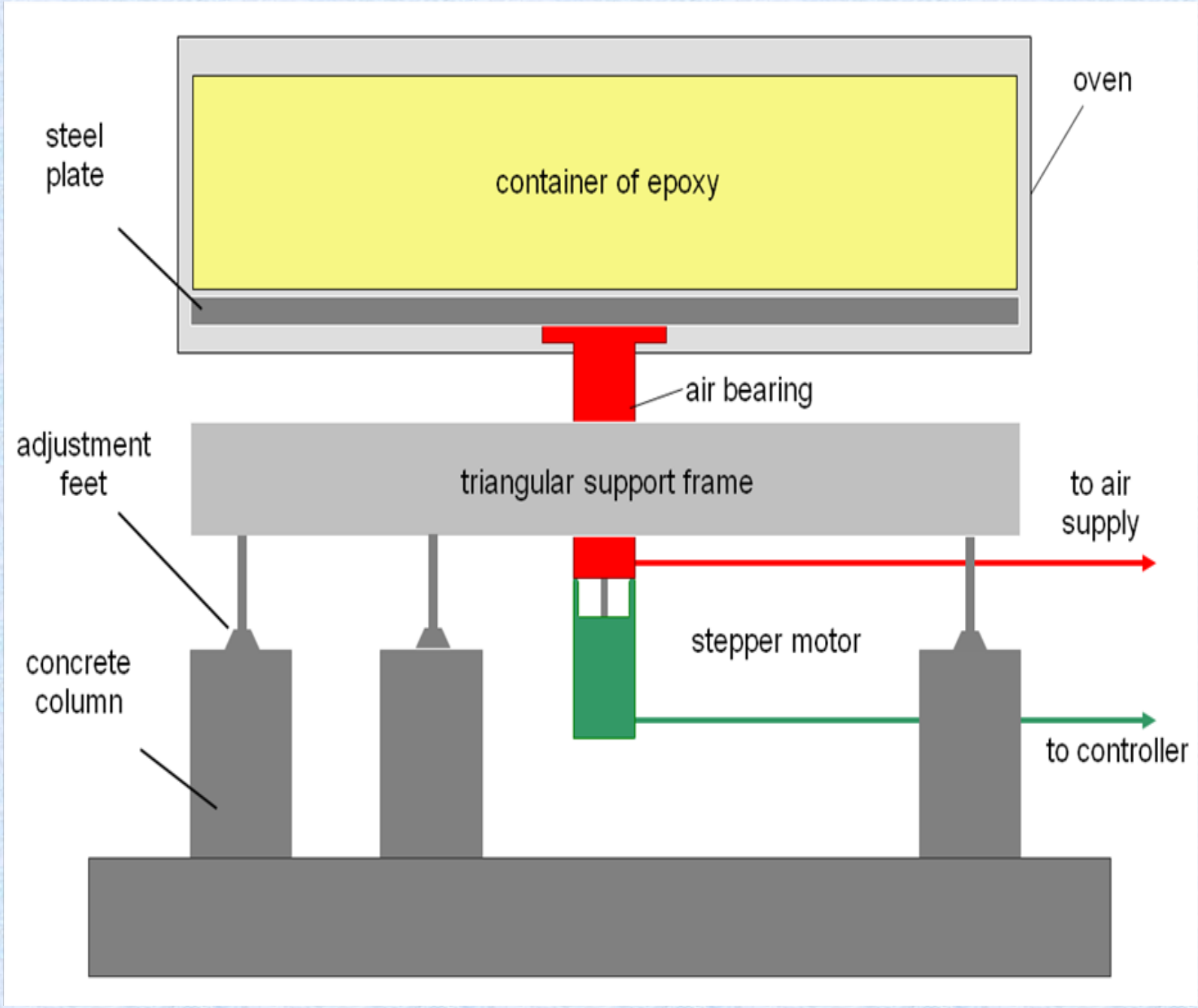



"Cast-in-place" ceramic foam core
Top glass sheet
Bottom glass sheet
NOV 15 2011


OCT 23 2011

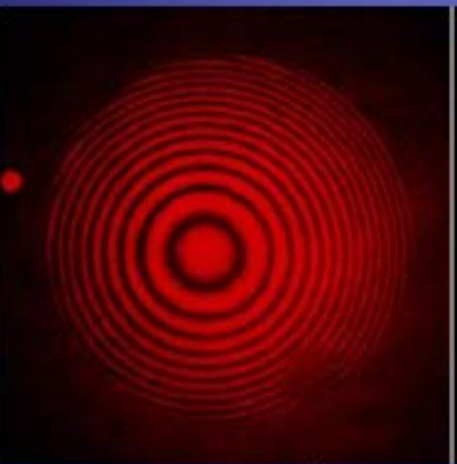
Spin-Cast Epoxy

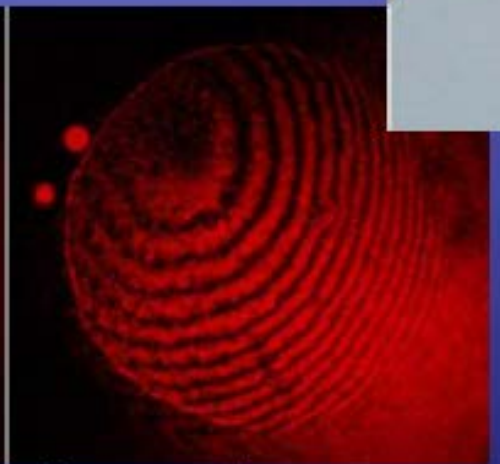
- Lisa Broadhacker at Lander University


steel
plate
container of epoxy
oven
air bearing
adjustment
feet
triangular support frame
to air
supply
stepper motor
concrete
column
to controller

Non-Vacuum Coating

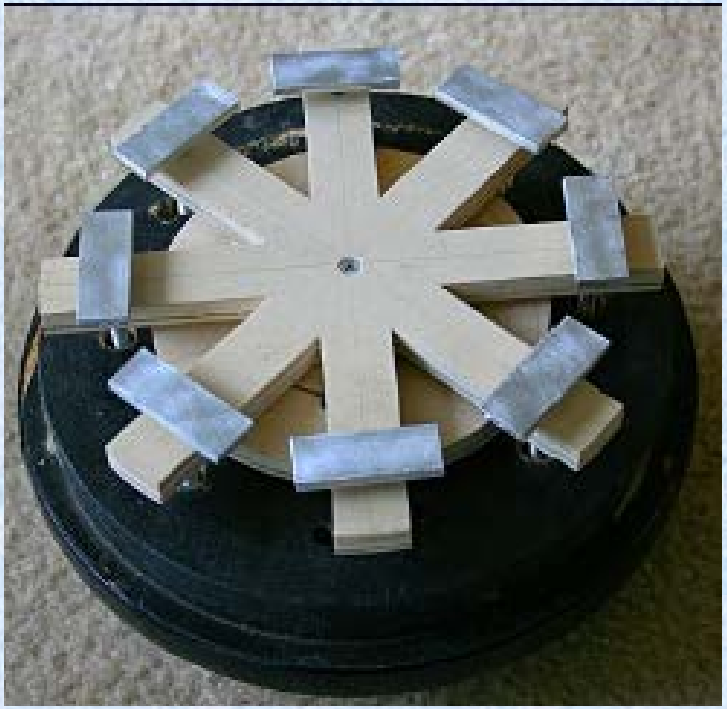
- Sagar Venkateswaran at Peacock Labs

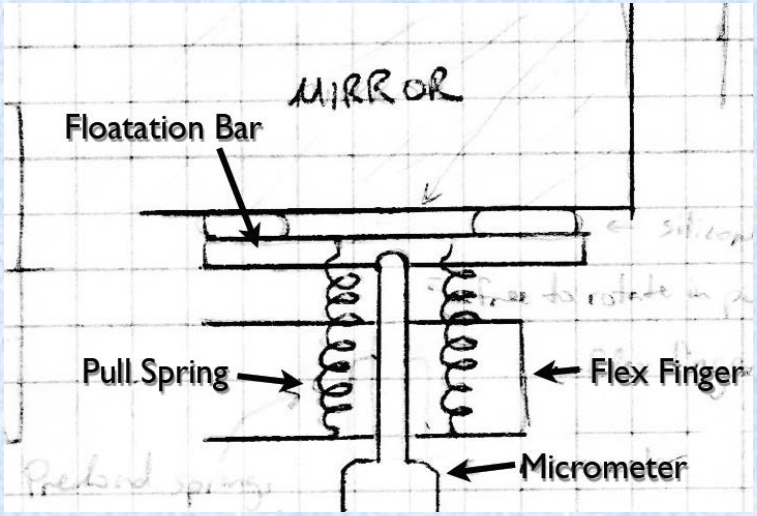


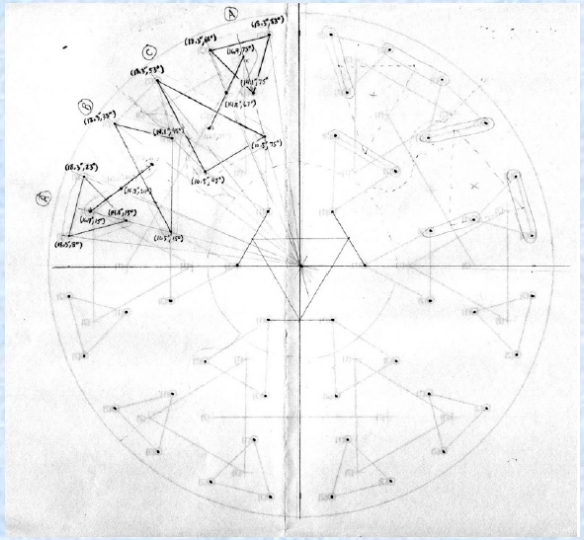


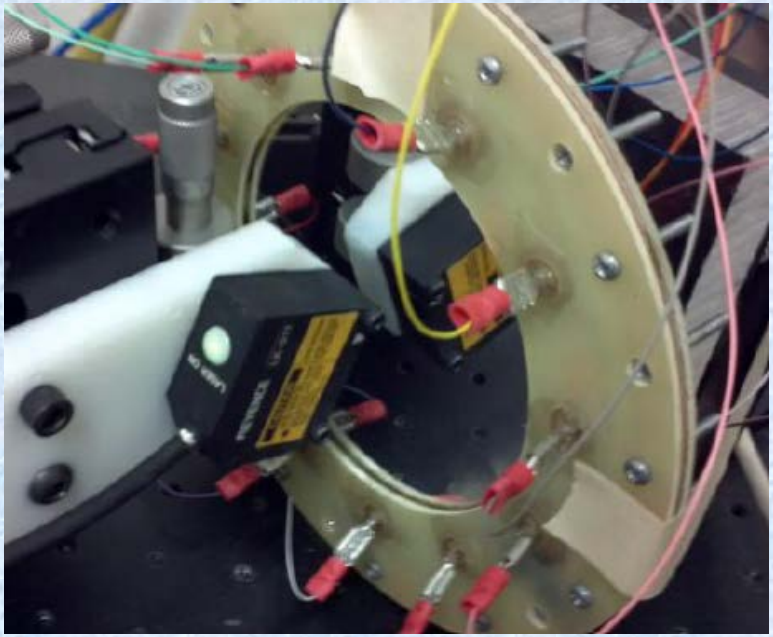
Cold silvered, optional Permalac overcoat

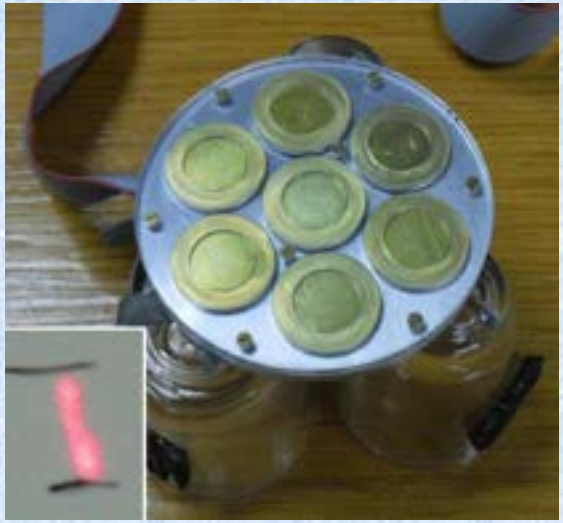
Testing at Gravic Labs




MIRROR
Floatation Bar
Pull Spring
Flex Finger
Micrometer

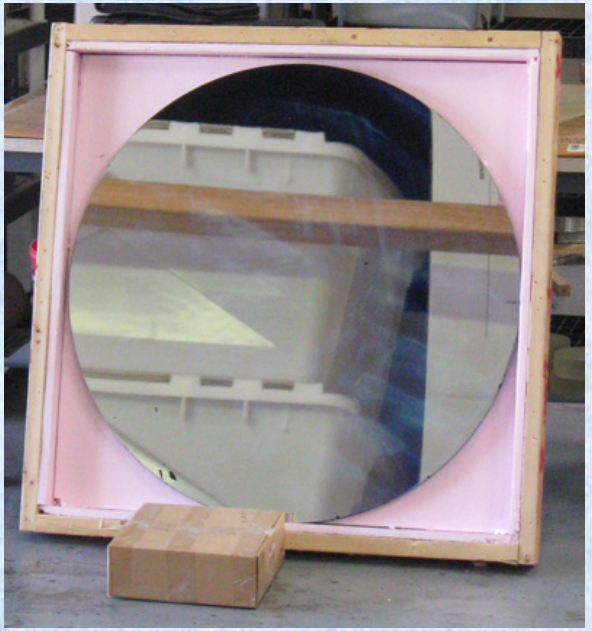






Big Blue

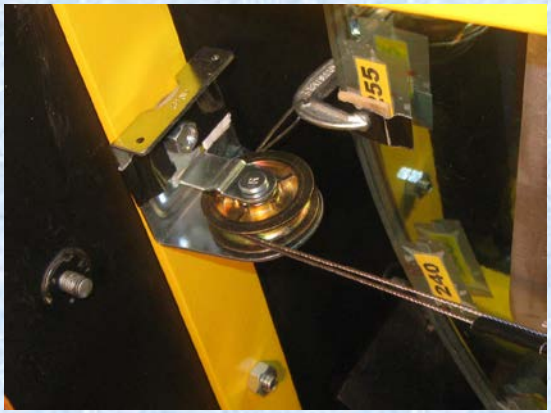
One Meter Predecessor



1-M Scope Setup

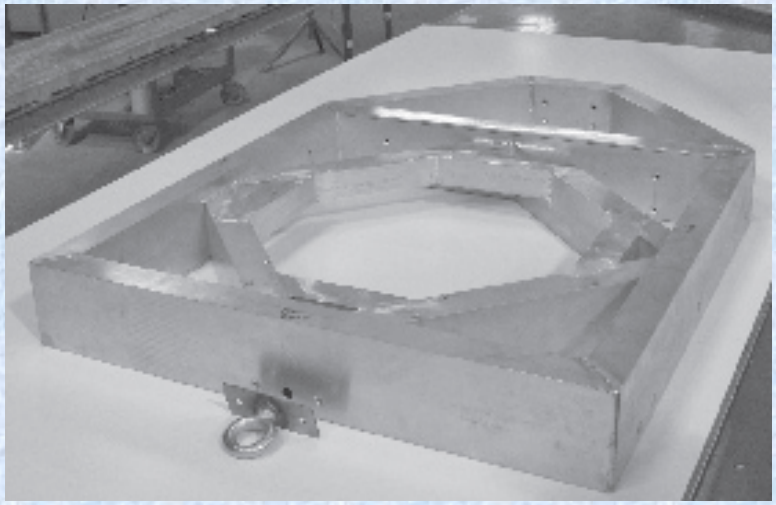
1-M Scope Portability

Big Blue—Portable 1.0 Meter Telescope

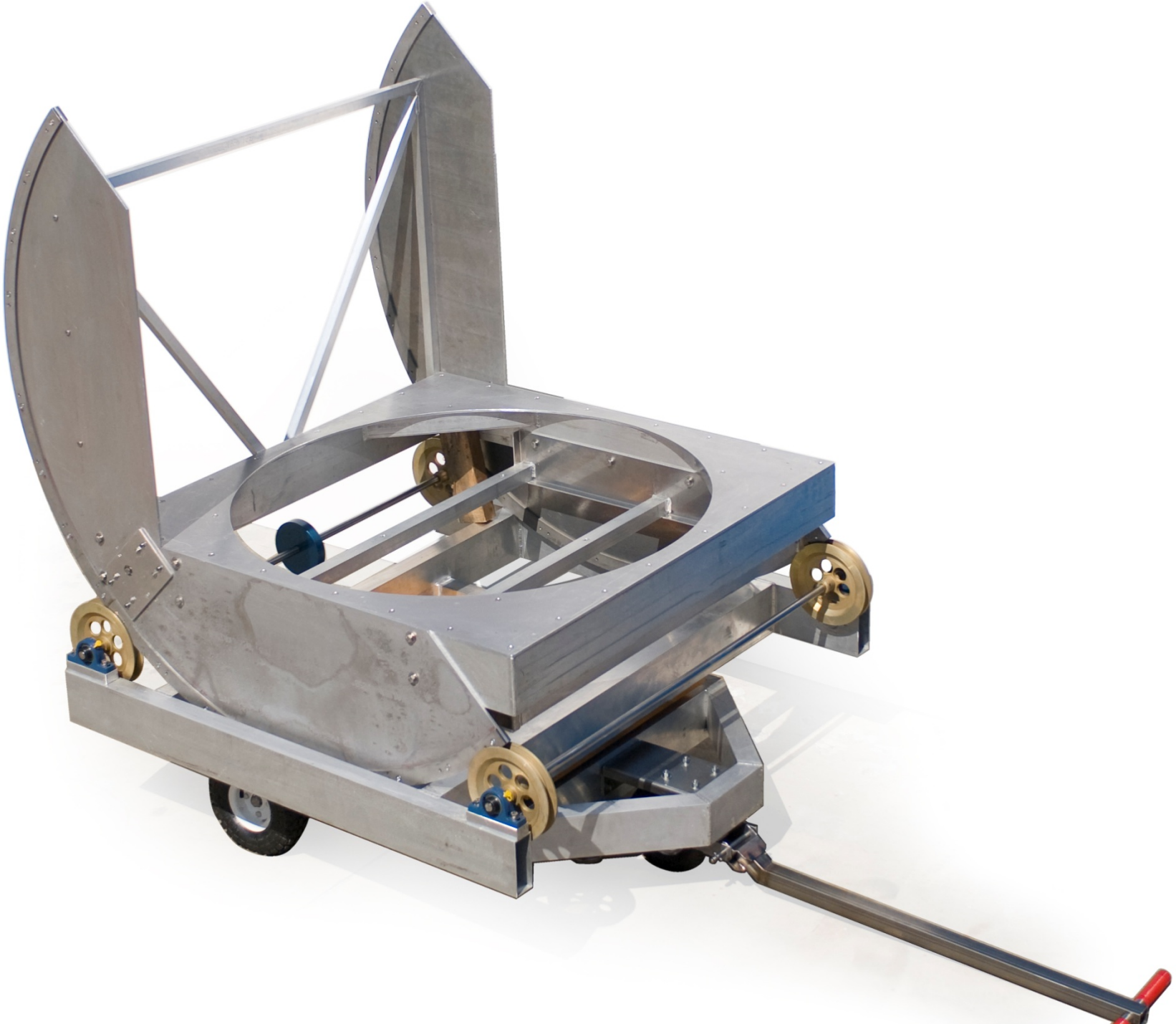


Shiny Sam

Aluminum Portable
1-meter Telescope




Hurley

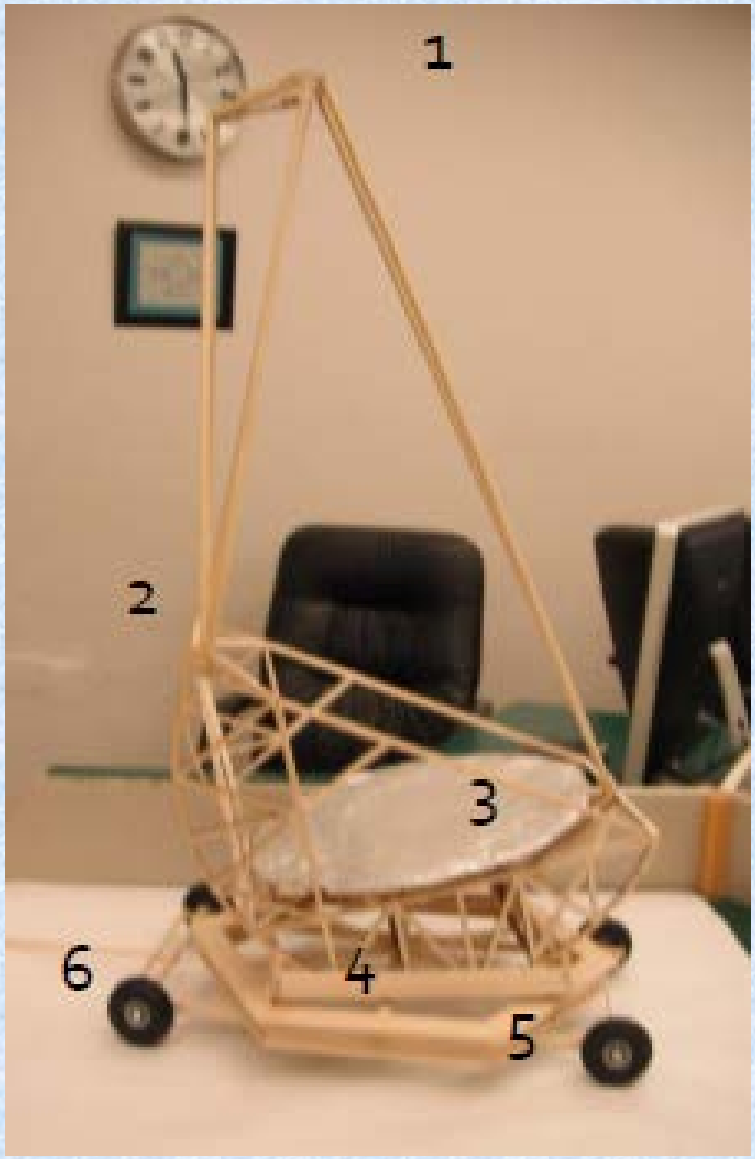


Cal Poly Project

World's Largest

Portable Telescope

Big Woody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2
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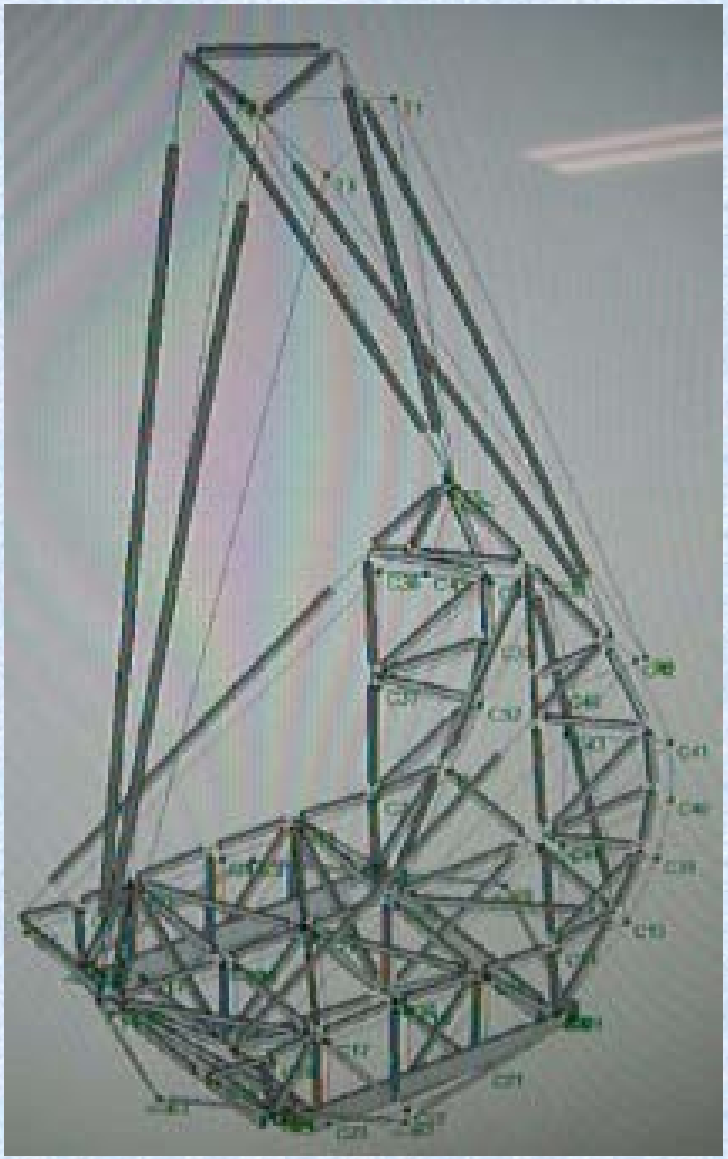
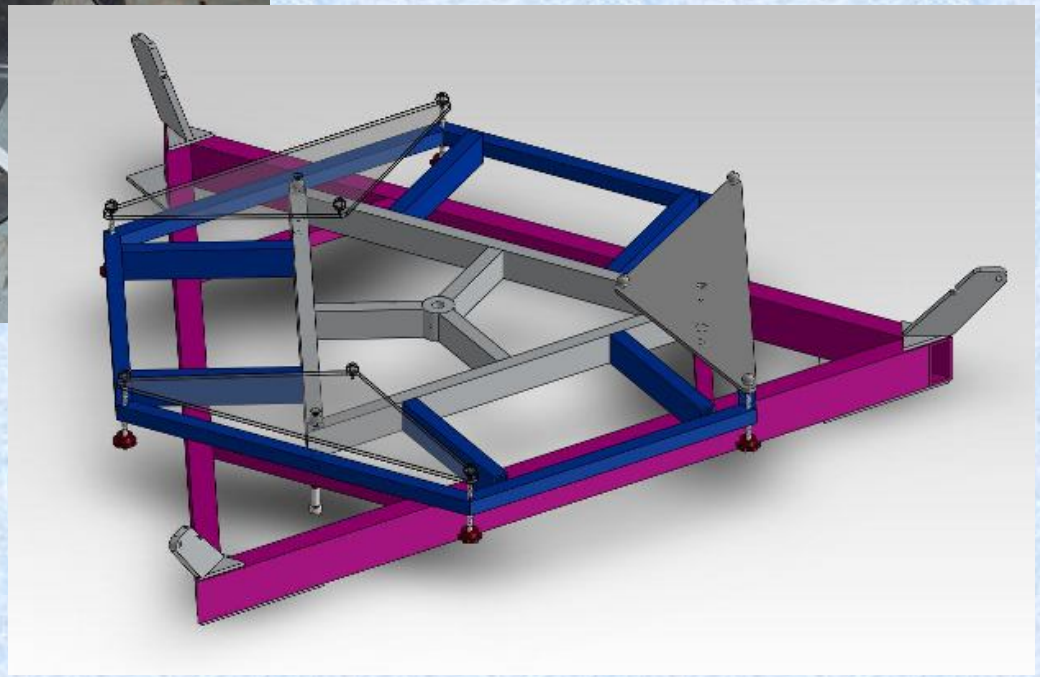



POLY


HAAS

Big Woody—Mirror Cell



Big Woody—Mirror Cell


EUROPA


Folgers