History and achievements of the Mt Canopus Observatory

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Given by Jean-Philippe Beaulieu, IAP

Rossbank – Tasmania's first astronomical observatory

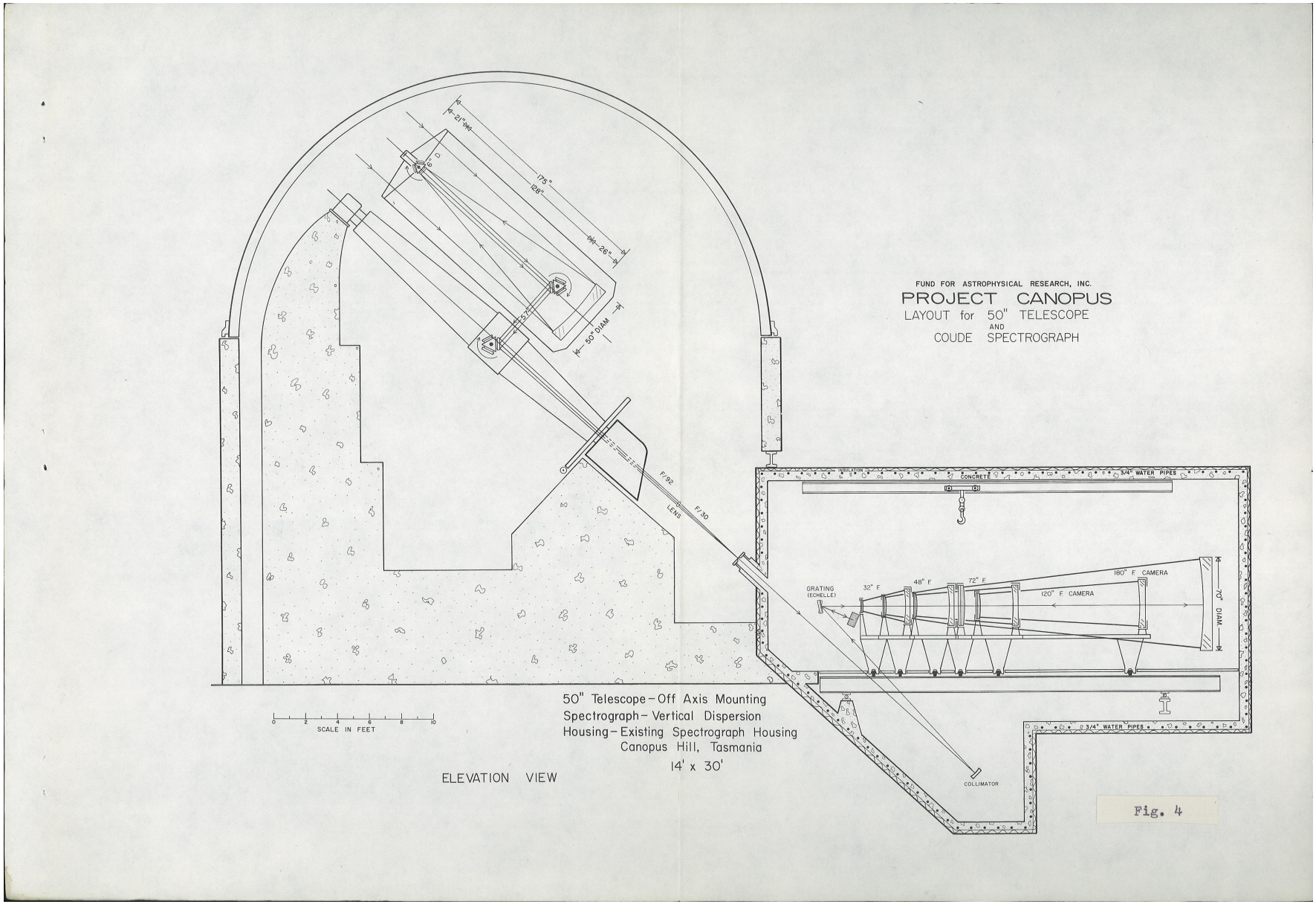
Optics developments inTasmania

- Need for “optical munitions” during WW II
- Optical Annexe makes prisms, gun-sights, aerial reconnaisance cameras
- Waterworth family company makes lenses, projectors after the war
- University continues optical research and builds 16” telescope at Mt Canopus

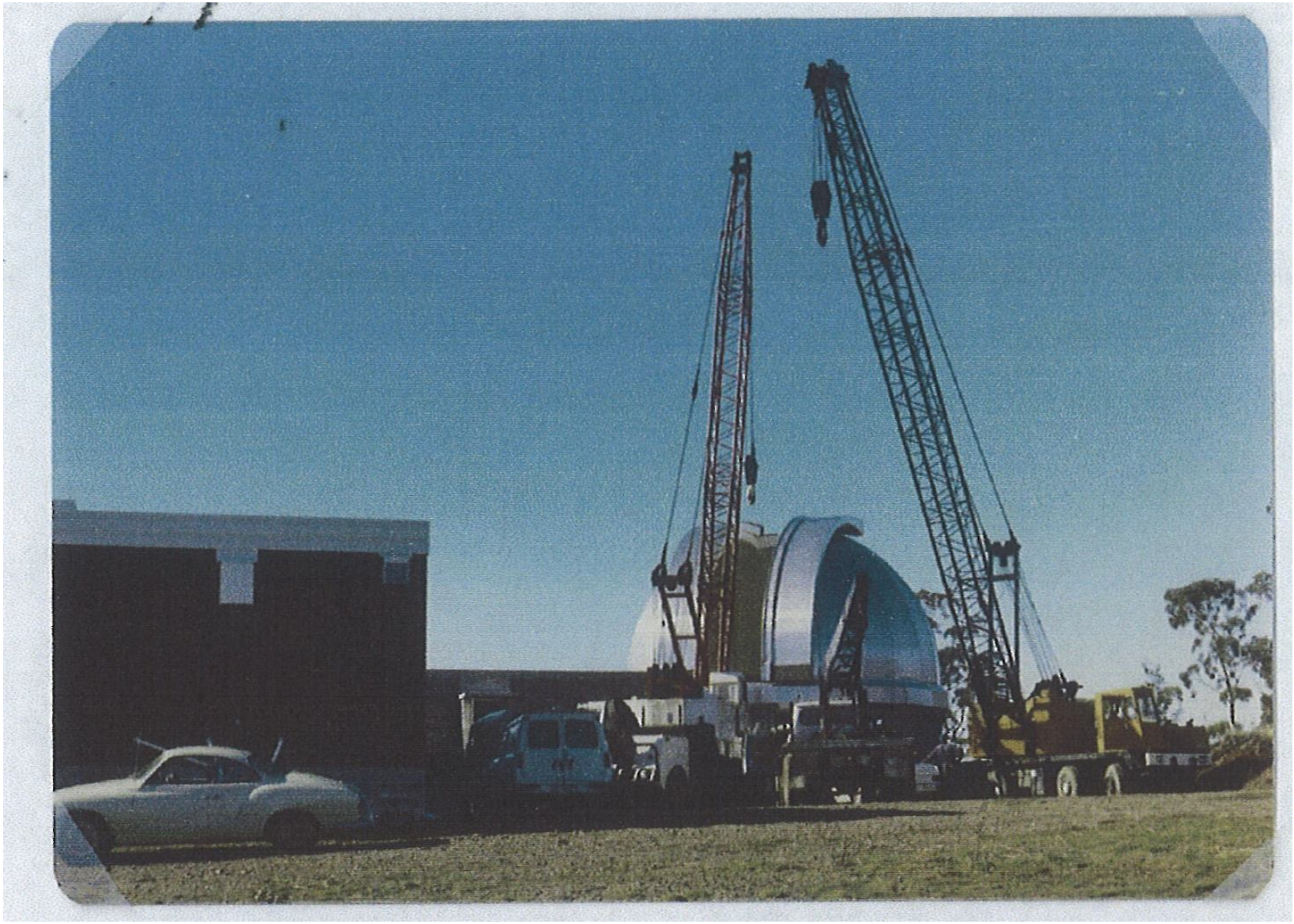
Project Canopus

- In 1965 Ted Dunham (UTas Professorial Fellow) purchases several large mirrors for project Canopus to do spectroscopy in Tasmania
- One 50” mirror sent to Dominium Astrophysical Observatory in Canada for polishing
- Mike Waterworth begins building 40” telescope at Mt Canopus Observatory during 1970's
- Telescope and Dunham designed spectrograph operational during early 1980's

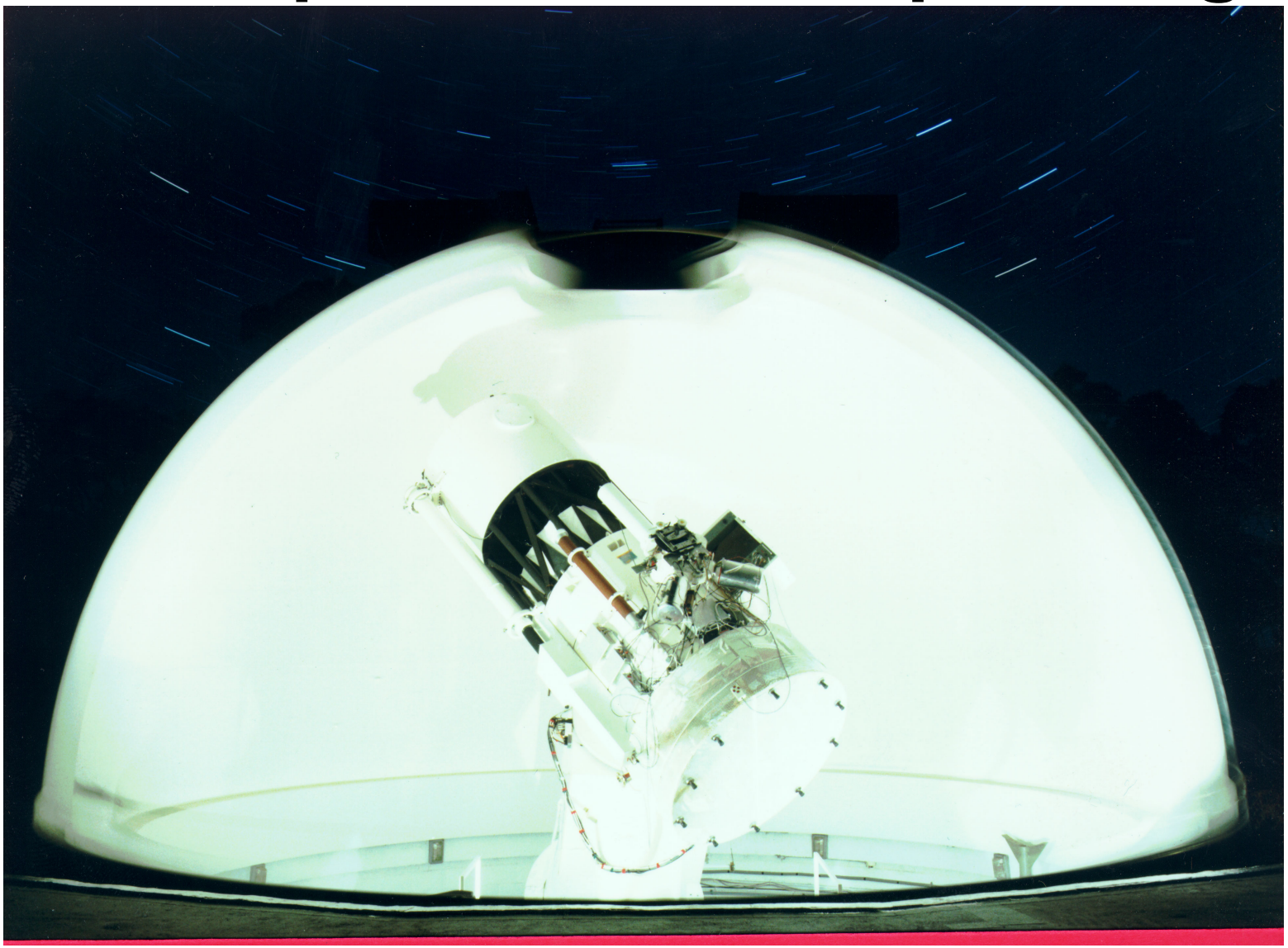
Plan for 50” telescope with spectrograph at Dunham Observatory on Canopus Hill

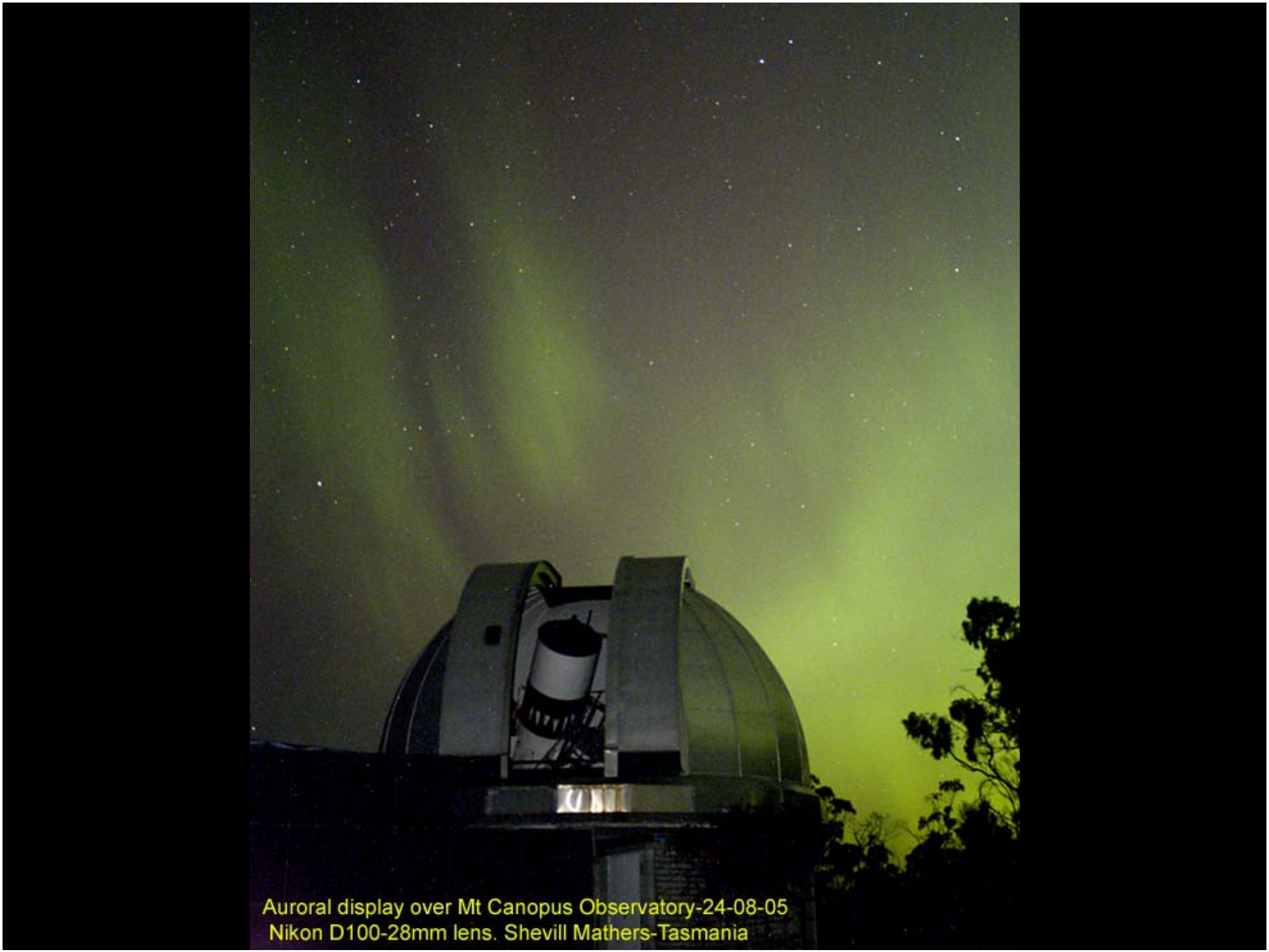


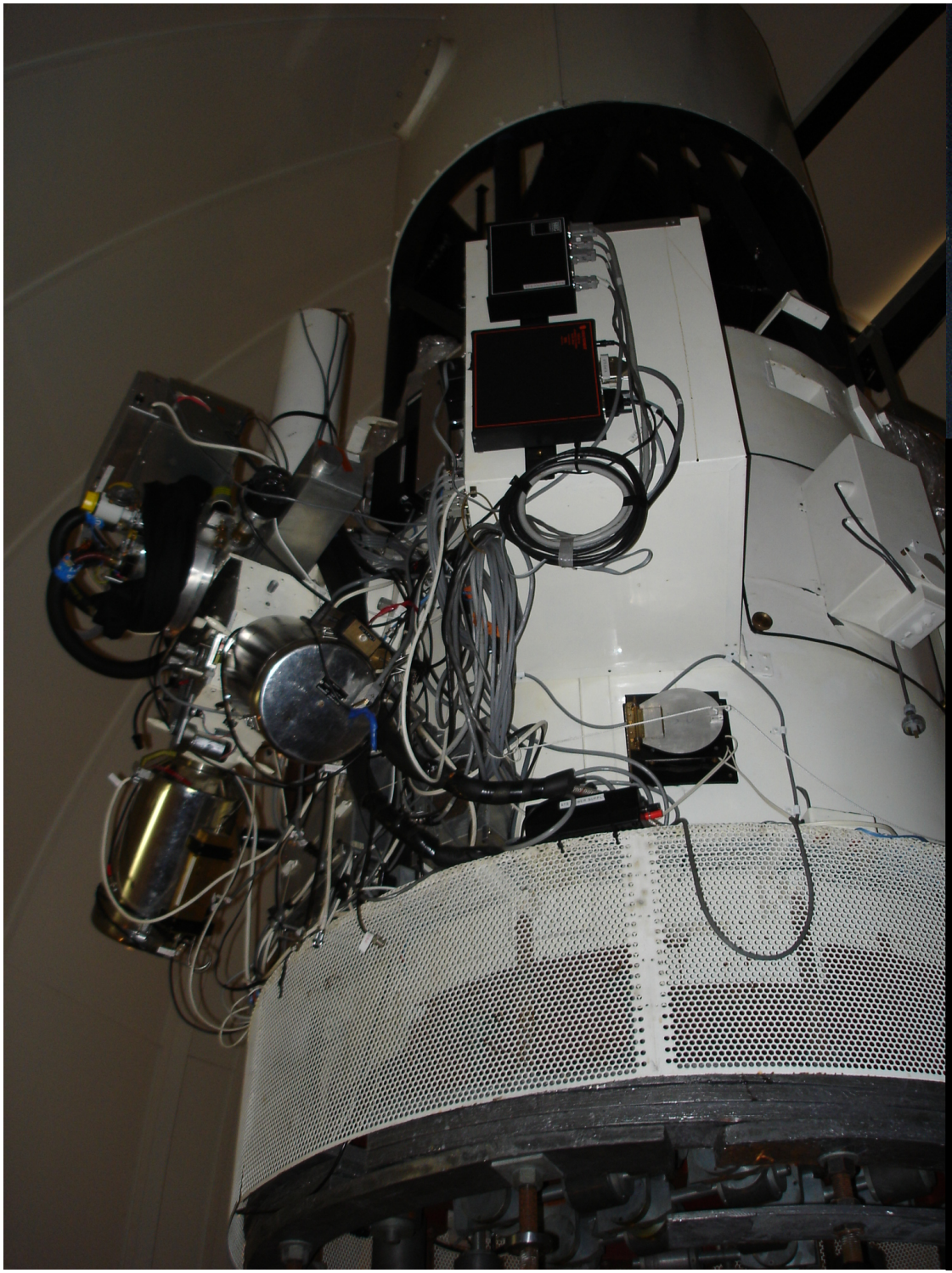
Installing the Mt Canopus 40” telescope in 1974

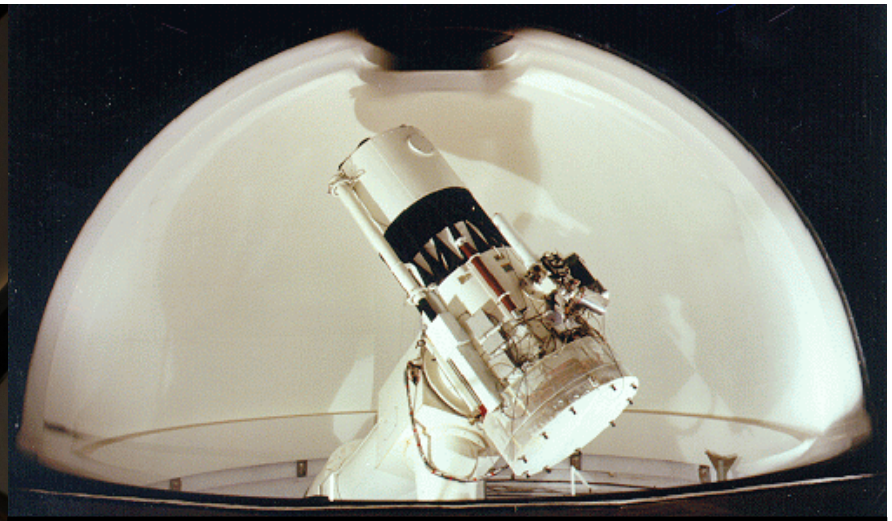


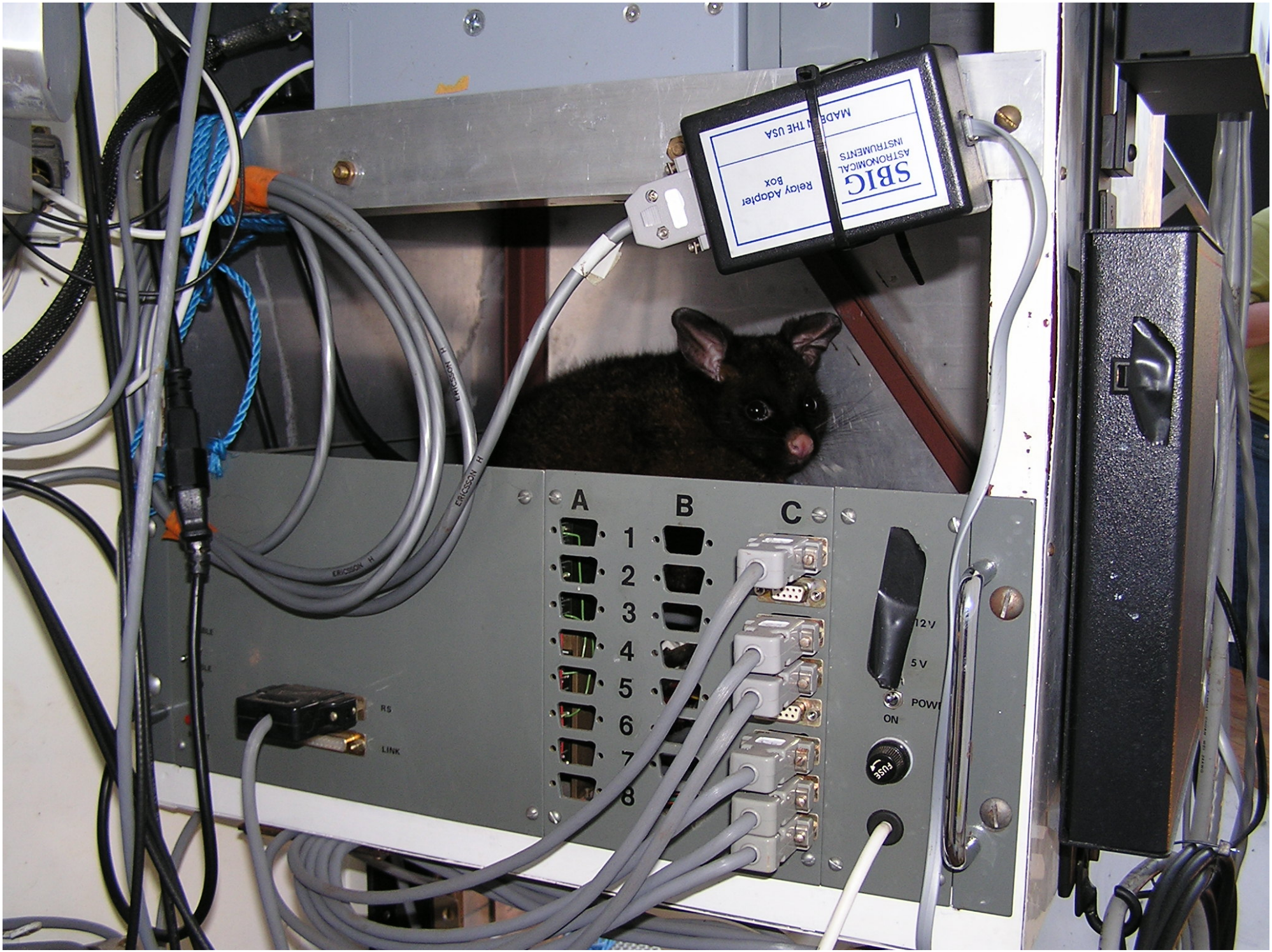
Mt Canopus 1 m telescope at night




Auroral display over Mt Canopus Observatory-24-08-05
Nikon D100-28mm lens. Shevill Mathers-Tasmania






SBIG
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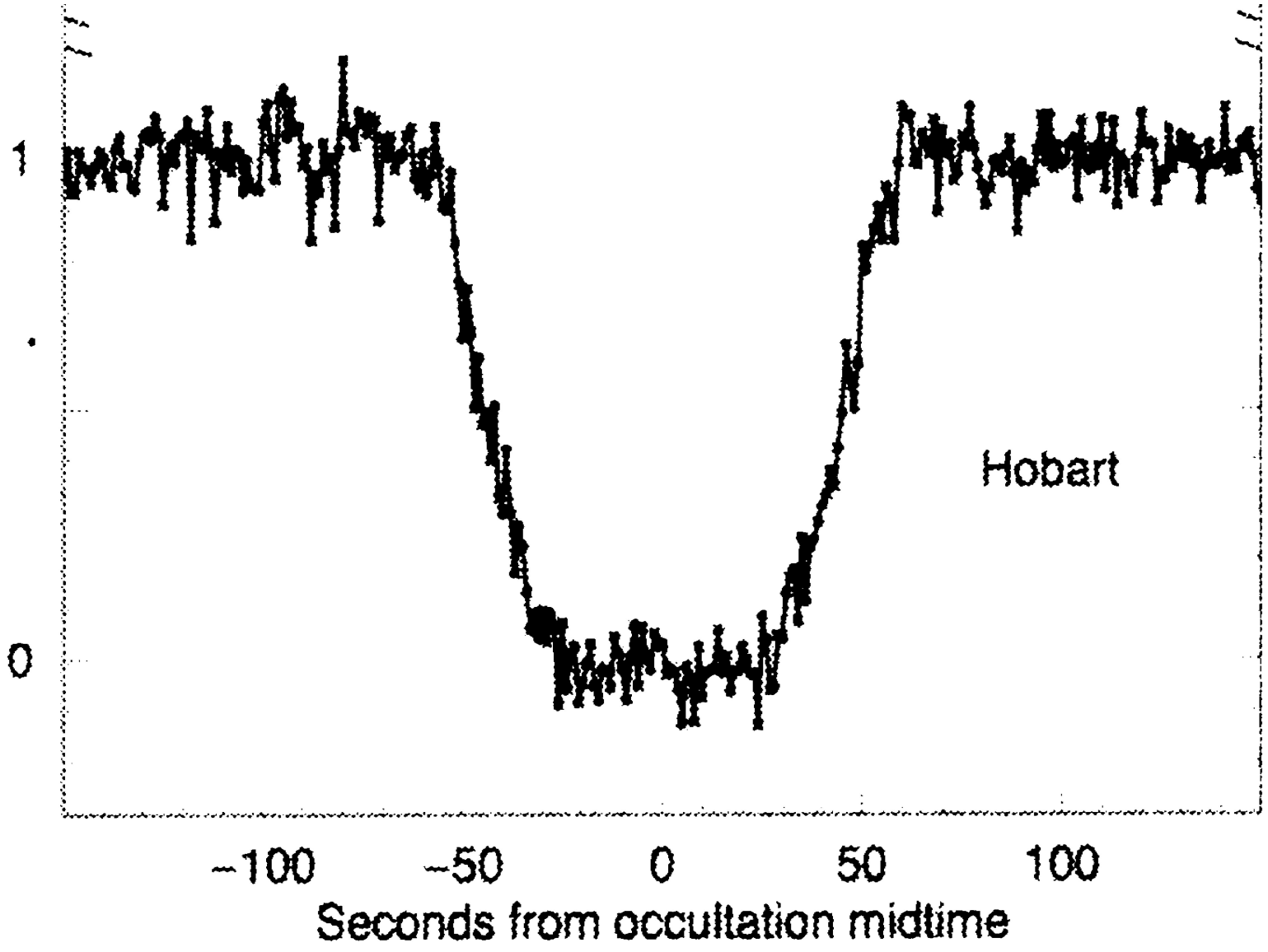
PLANET collaboration serving Science

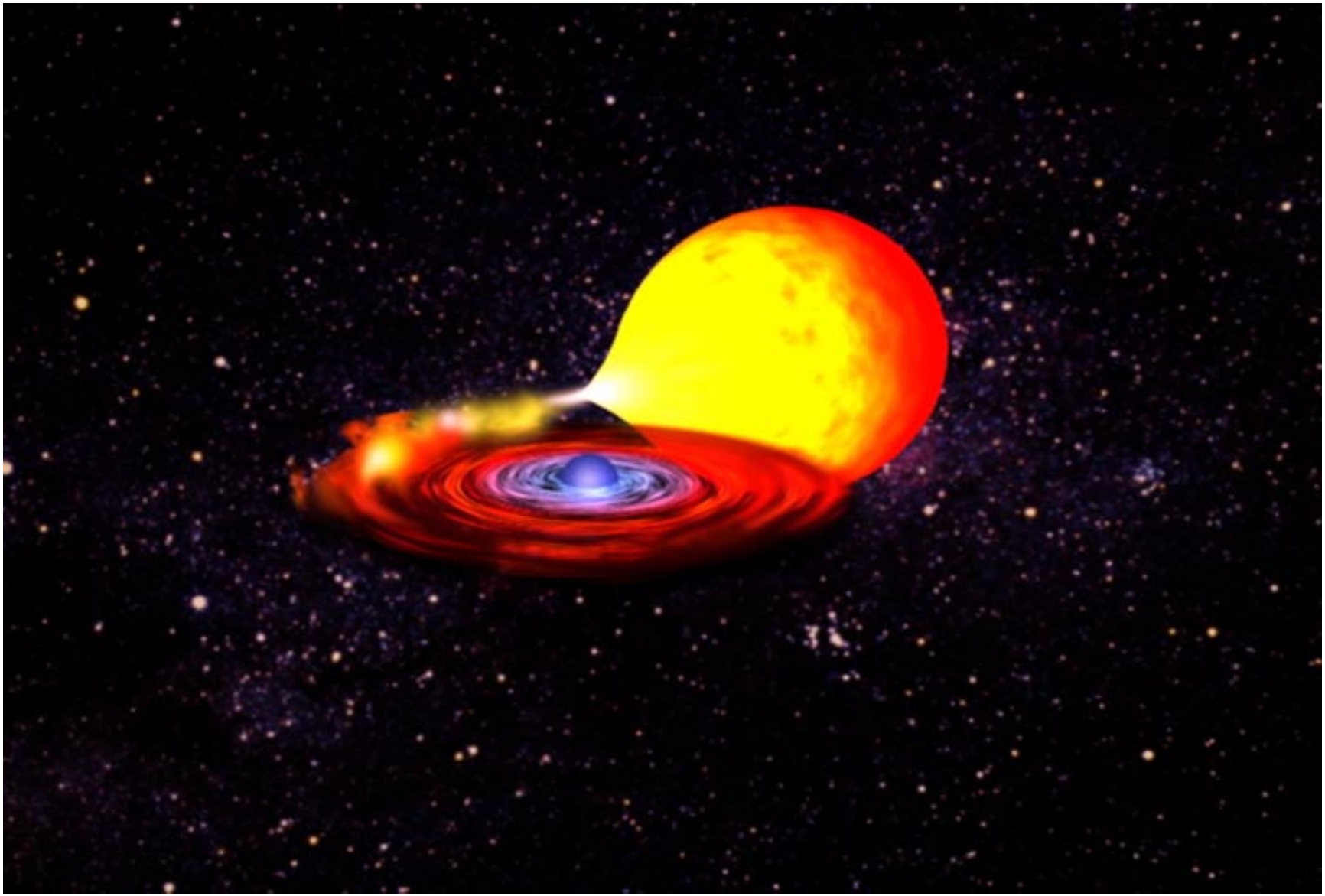
Scientific achievements

- **Detection and monitoring of Pluto's atmosphere**
- **Optical identification and study of millisecond X-ray pulsars.**
- **Helping in the discovery of the first cool rocky exoplanet and the first analogue of the solar system**
- **Working with an international collaboration to estimate the frequency of planets in our galaxy**

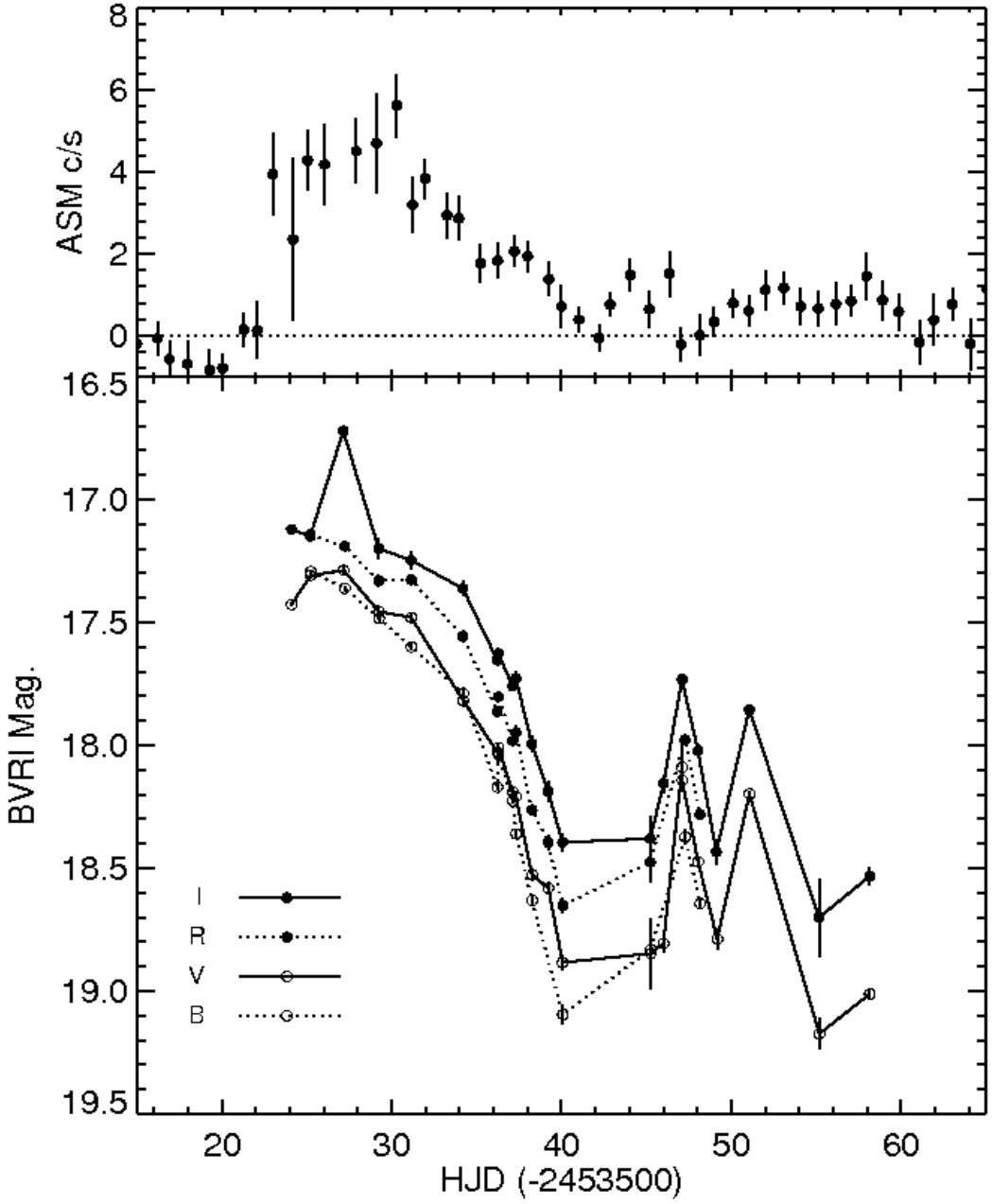
Light curve of star occulted by Pluto



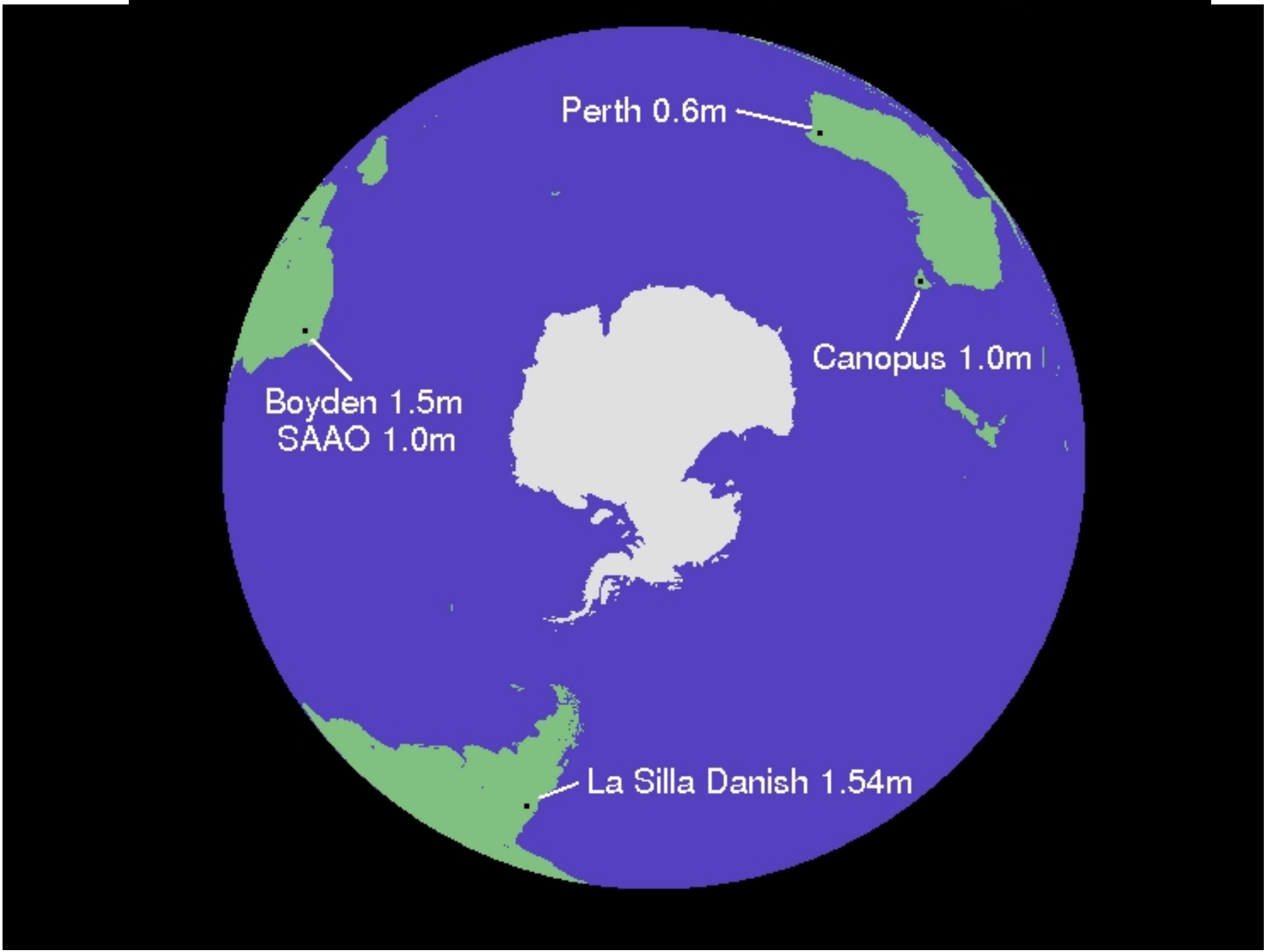
Artists representation of accreting X-ray binary



X-ray & B,V,R,I light curves from ms pulsar



Click on the names to obtain descriptions and images of PLANET telescopes



Canopus helps find 2'nd microlensing planet – in 2005 after 8 long years!

UniTAS
NEWS FROM THE UNIVERSITY OF TASMANIA

By Jupiter!

UTAS scientists find new planet

UTAS scientists have discovered a brand new planet orbiting a distant star in our galaxy.

The discovery is part of a world-wide astronomy effort that involved amateur and professional groups. The Probing Lensing Anomalies Network, or PLANET project is a global network that has been monitoring the anomaly in the light from a distant star.

The University's Dr Stefan Dieters has been up at all hours watching the light from the star change with the microlensing techniques.

"If one star passes directly in front of a background star its gravity acts like a giant lens, magnifying the background star's brightness. There is a brightening and fading of the background star's light.

"These alterations in light are called microlensing events. They are rare: only 1 in 10 million stars monitored will have one, and they last only a few hours. So to find planets you need to intensively monitor these microlensing events," Dr Dieters said.

The discovery is only the second planet to be found using the

STARS IN THEIR EYES: Planet-watchers Dr Stefan Dieters and Dr Kym Hill at the University's Mt Canopus Observatory.

(Insert) The first images of the new planet, affectionately known as "OB05-071A".

"Finding out how many stars have planets, and then how many have Earth mass planets will help

Fulbright Scholarships

Applications are now open for 2006 Fulbright Scholarships.

POSTGRADUATE

Up to eleven Fulbright Postgraduate Awards are offered for 8-12 months study or research in any field. Current Australian Postgraduate Award holders are encouraged to apply.

PROFESSIONAL

Valued at up to $25,000, up to four of these awards support a 3-6 month research program, for professionals to undertake professional development in the US.

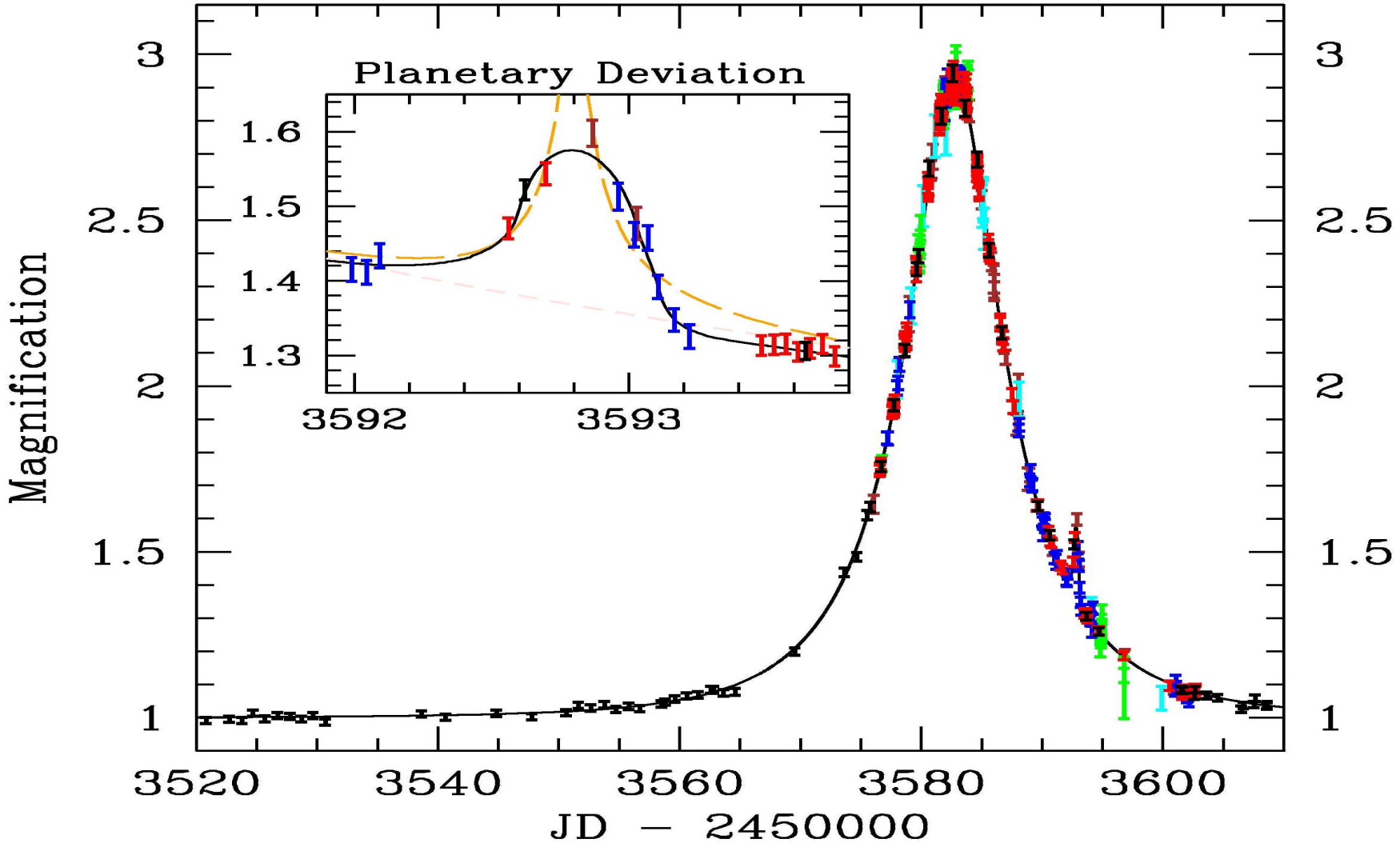
POSTDOCTORAL

Valued at up to $A30,000, this award supports a 3-12 month research program for scholars who have recently completed a PhD and want to pursue ongoing research.

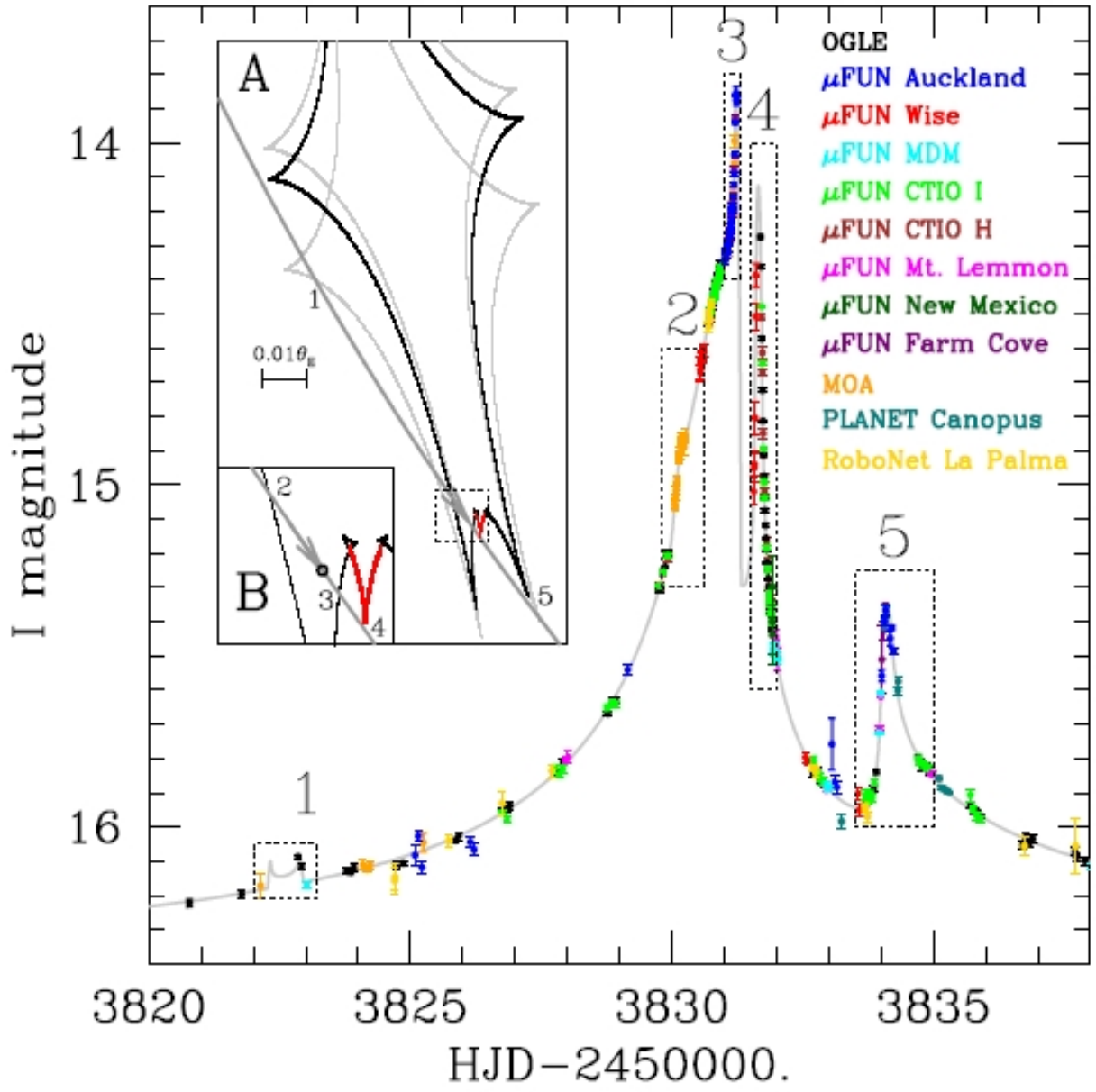
SENIOR SCHOLAR

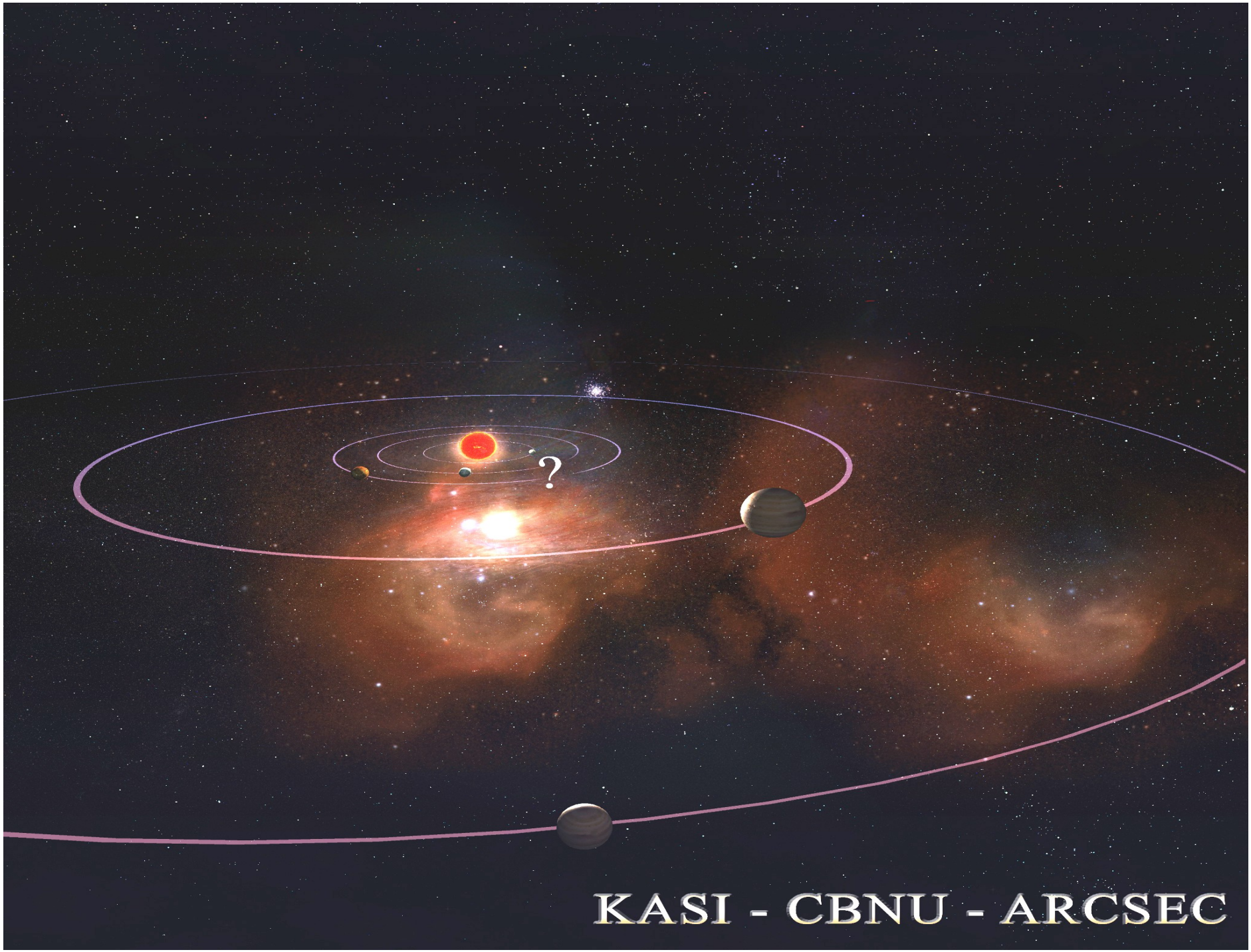
Valued at up to $30,000, these awards support a 3-6 month research

Light curve of OB-05-390 with planetary "bump"



OB06109 multiple planetary system

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KASI - CBNU - ARCSEC

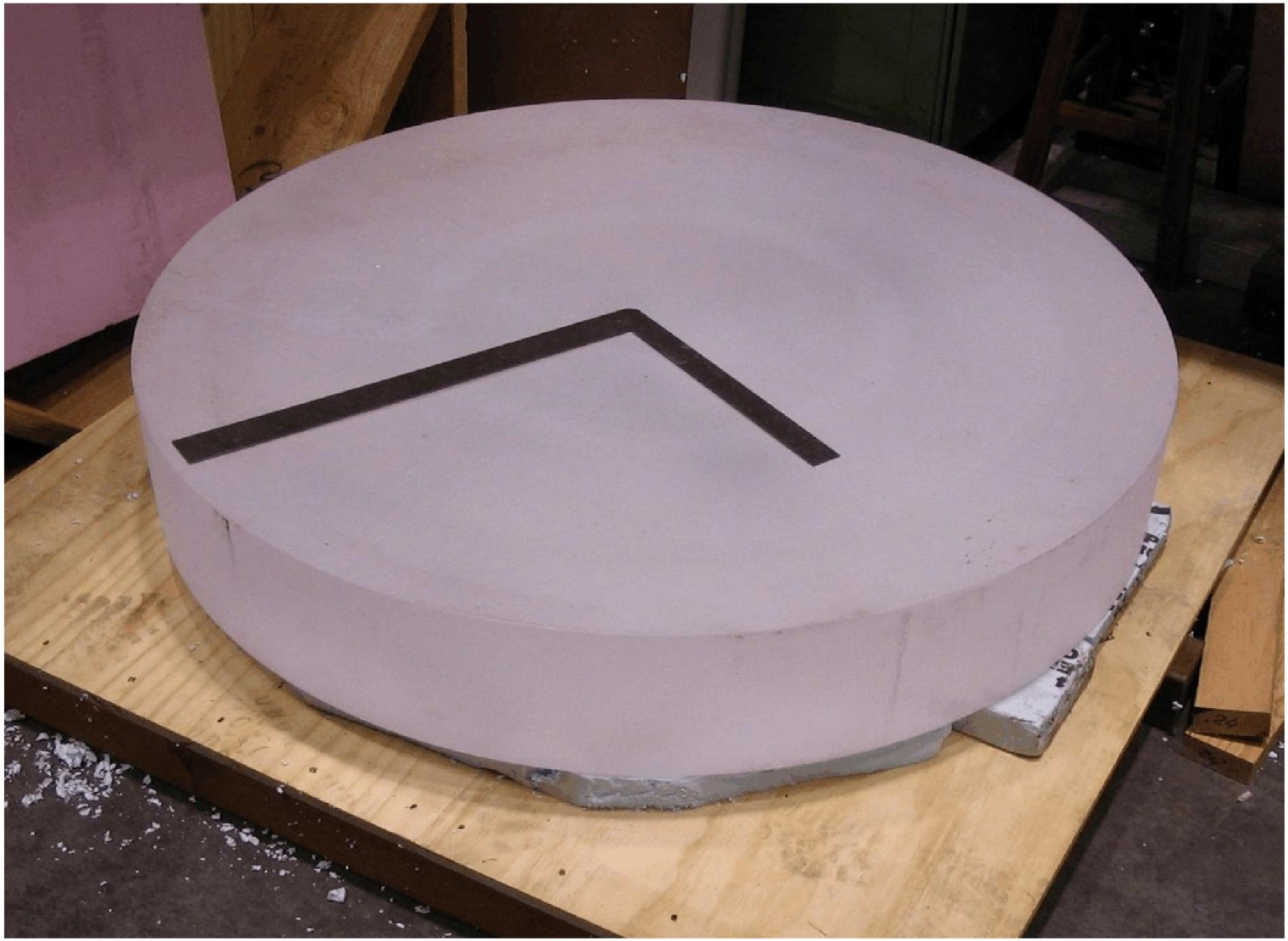
Some more history and plans

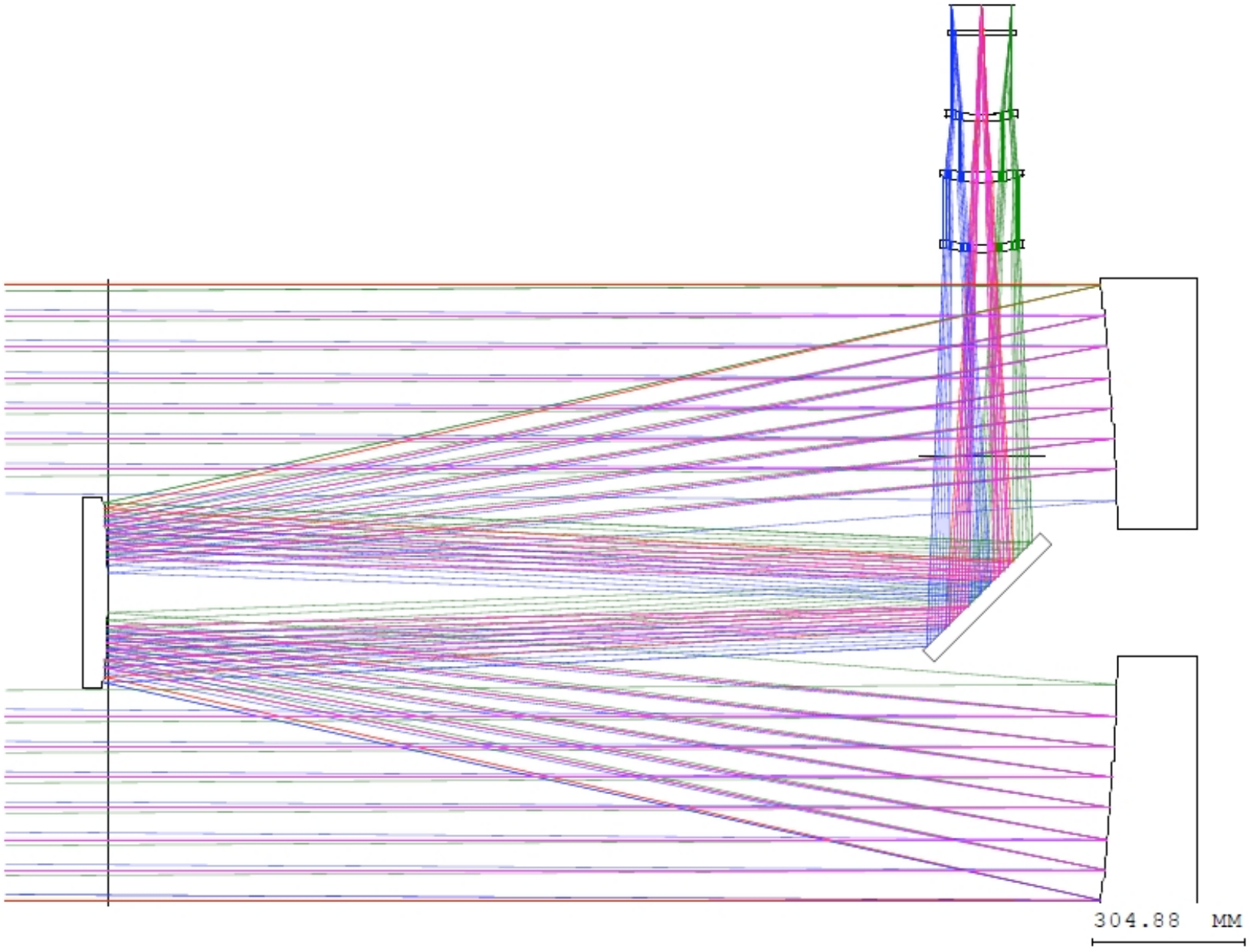
- **Light pollution has forced closure of the Mt Canopus Observatory – happening now!**
- **Sale of Dunham's mirror – to Caisey Harlingten**
- **Caisey offers UTas a new telescope using the mirror**
- **University builds new observatory at Bisdee Tier near Jericho in the Tasmania midlands**
- **The 1 metre telescope to be rebuilt by Caisey with a new mount in New Mexico**
- **Both telescopes to be operable remotely**

Tasmanian Mirror Blank

Included in this document are photographs of the Tasmanian mirror blank and some documentation.

The Figure 1 shows the full mirror blank with a two foot ‘square’ to indicate scale.





Fifty Inch Telescope

Scale: 0.08 EMP 15-Nov-07

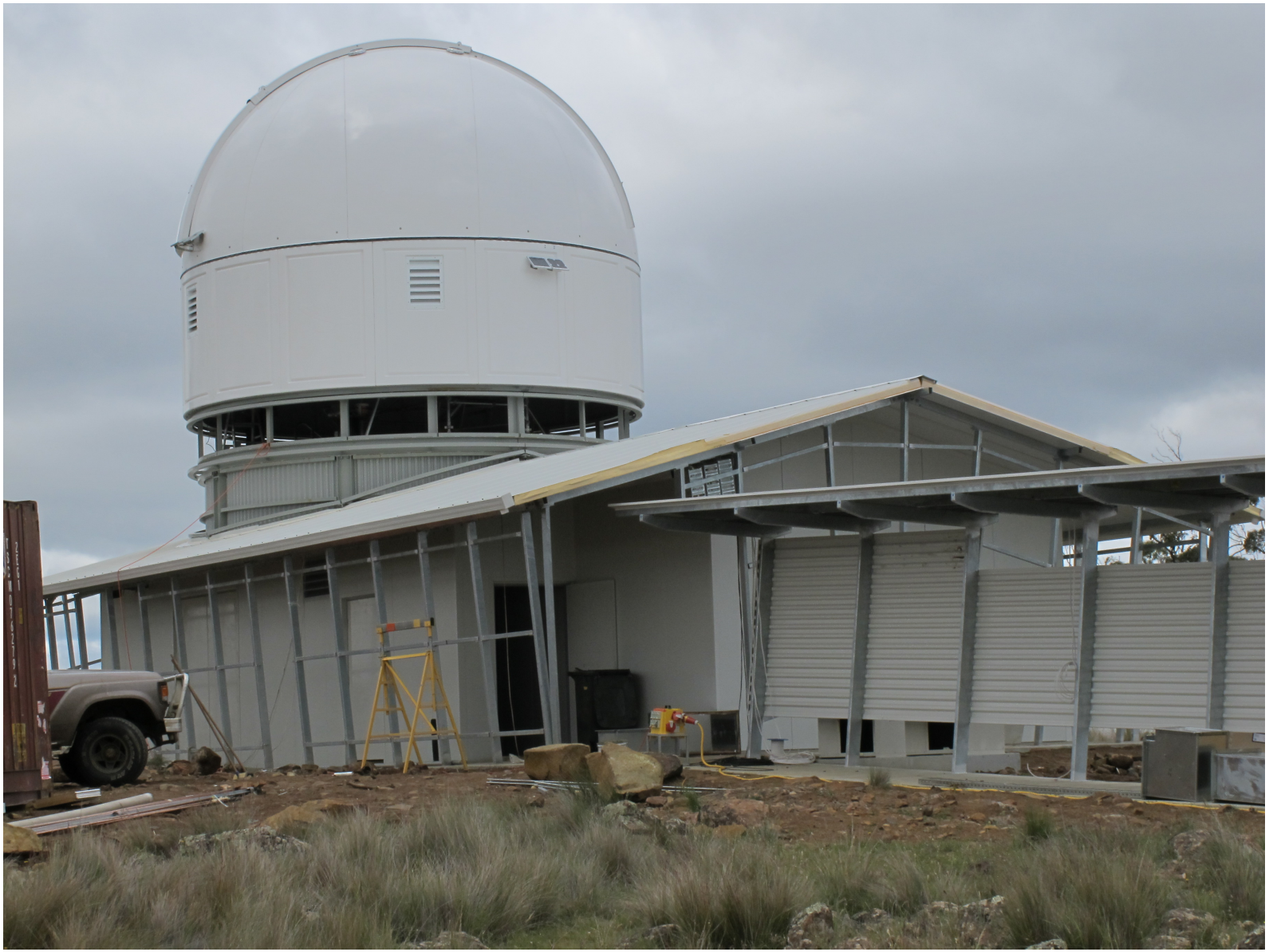
Prototype 85 cm telescope in Caisey's Norwich workshop

H127 being assembled at Moonah

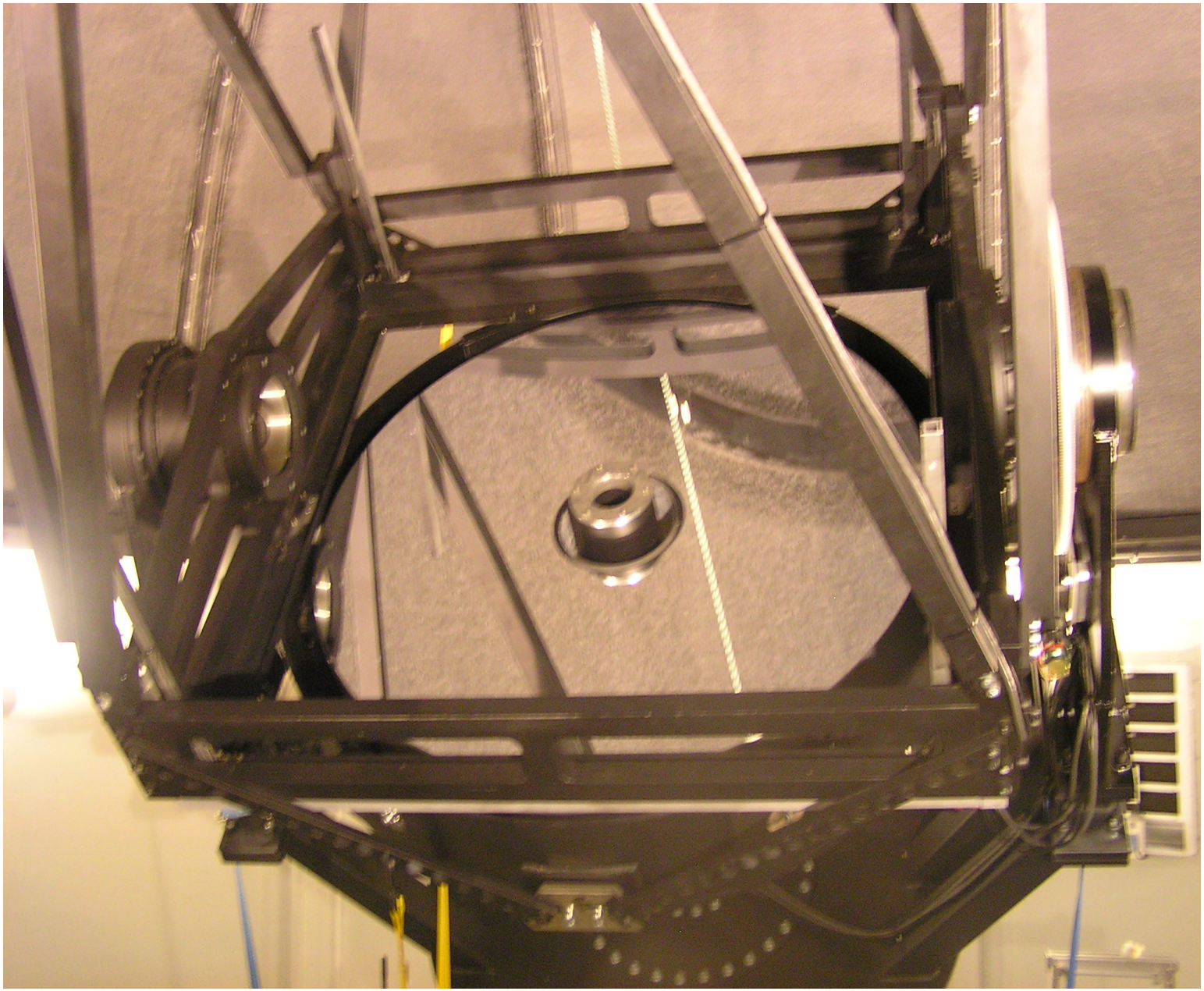
New observatory from Spring Hill

New observatory from the air

Observatory under construction

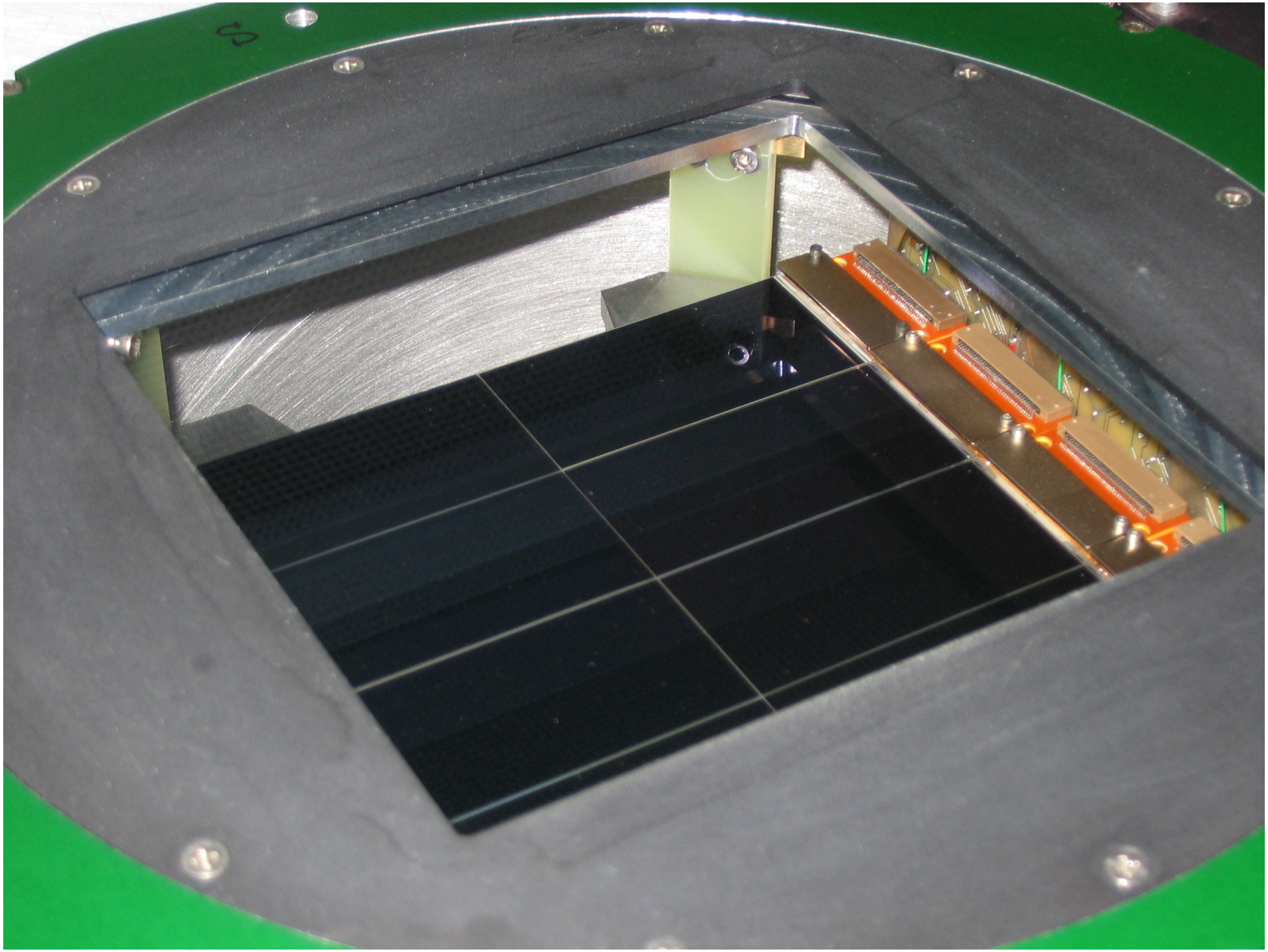


Primary mirror with 2 folded Cass focal stations




the Johns
PLANET WORLD TOUR
Live at Greenhill obs. Feb 23, 2013

Eight (2Kx4K) chip CCD array



Wide field camera

- Collaboration between UTas, OGLE and IAP to install OGLE III wide field camera at one folded Cass focus.
- Observing strategy => 15 fields/hr covering 5.4 sq deg. =>640,000 stars/image and ~10 million stars/hour.
- The objectives are:
    - Follow many microlensing events at hourly intervals. Greatly increase the frequency of planetary detections.
    - Complement other survey groups (OGLE, MOA, Wise and soon Korean wide FOV telescopes) to increase the probability of 24 hr/day coverage of microlensing events.

Plans for early 2015

- **Finalizing commissioning of the telescope (with support from the Frenchies)**
- **Why it took so long ? Lots of things to correct or redesign from original design**
- **Pointed observations from May**
- **Catching Pluto's transit on June 29**
- **Follow up of Spitzer events + alert mode**

First night when actually the new telescope worked.

May 11, 2014, 5h30 beer time.

UTAS & France :

Microlensing activities work well based on coordination, fairness, trust and friendship.