GEMINI OBSERVATORY

Exploring the Universe, Sharing its Wonders

Subaru-Gemini Time Exchange (and more!)

Markus Kissler-Patig

Gemini Director

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The Gemini Observatory in 2014

The Partnership

Gemini is managed by AURA on behalf of the NSF

for an international partnership:

NSF | NRC-CNRC Canada | Ministério da Ciência, Tecnologia e Inovação – Governo Federal – Brasil – País rico é país sem pobreza | Australian Government – Australian Research Council | Ministerio de Ciencia, Tecnología e Innovación Productiva – Presidencia de la Nación | CONICYT – Gobierno de Chile

Shares 2013-2015

US	65.5 %
CA	18.7 %
BR	6.5 %
AU	6.2 %
AR	3.1 %

Annual Contributions 2013-2015:

- $27M operations
  (~20% less than <2013)
- $TBD instrumentation (best effort)

NEW now open to new partners
(long term or limited term)

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out in 2016+

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The Telescopes

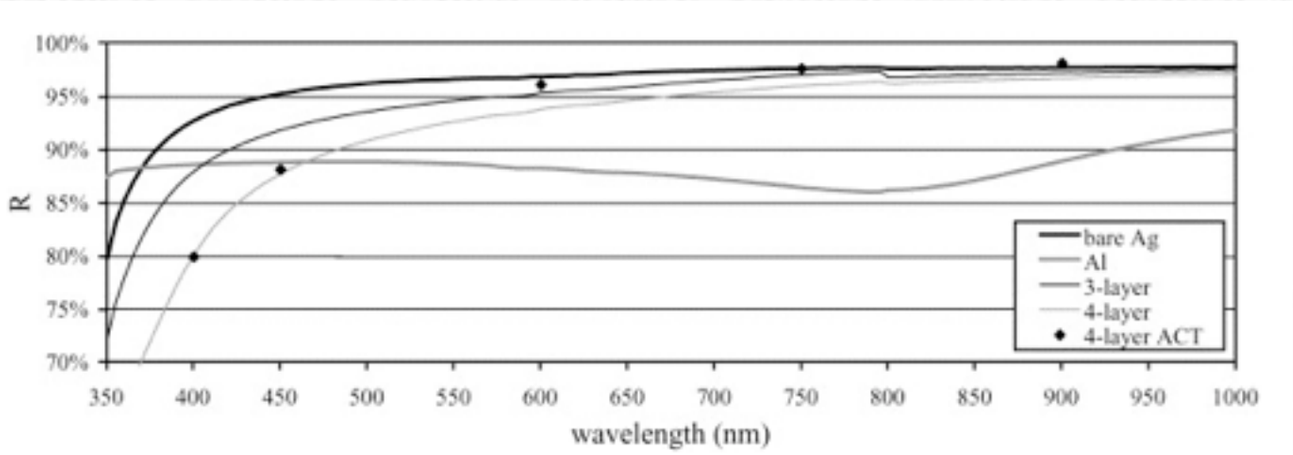
Optical configuration:
Ritchey-Chrétien Cassegrain

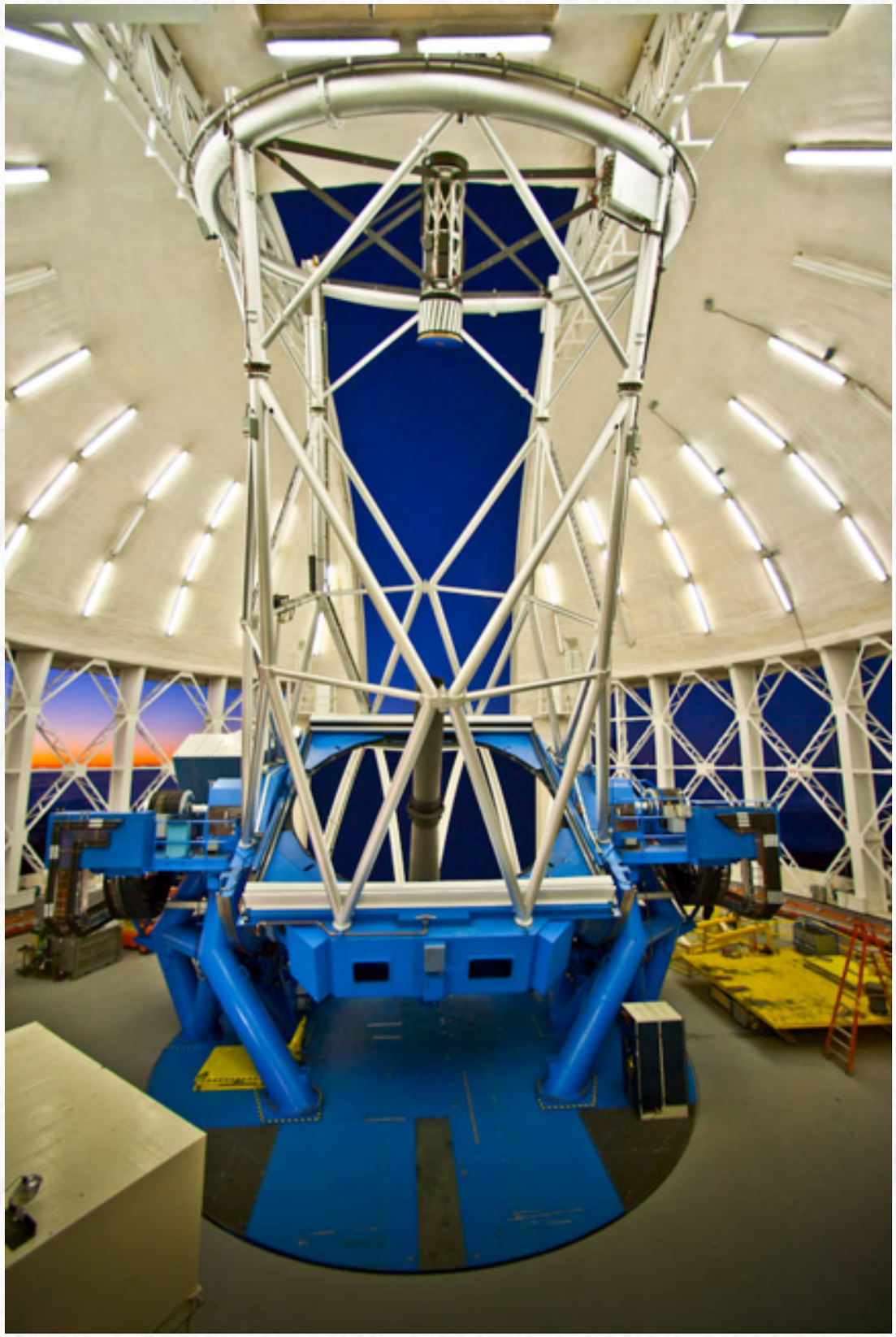
Primary Mirror:
f/1.8, 8.1 m diameter, 20cm thick, 22 tons
ULE glass by Corning's Canton and REOSC

Secondary Mirror:
1.0 diameter, Zerodur by Schott and Zeiss
Tip-tilt corrections up to 200Hz

At Cassegrain:
f/16, 1.610mm/arcsec

Coating:
Four-layer protected Silver





The Telescopes

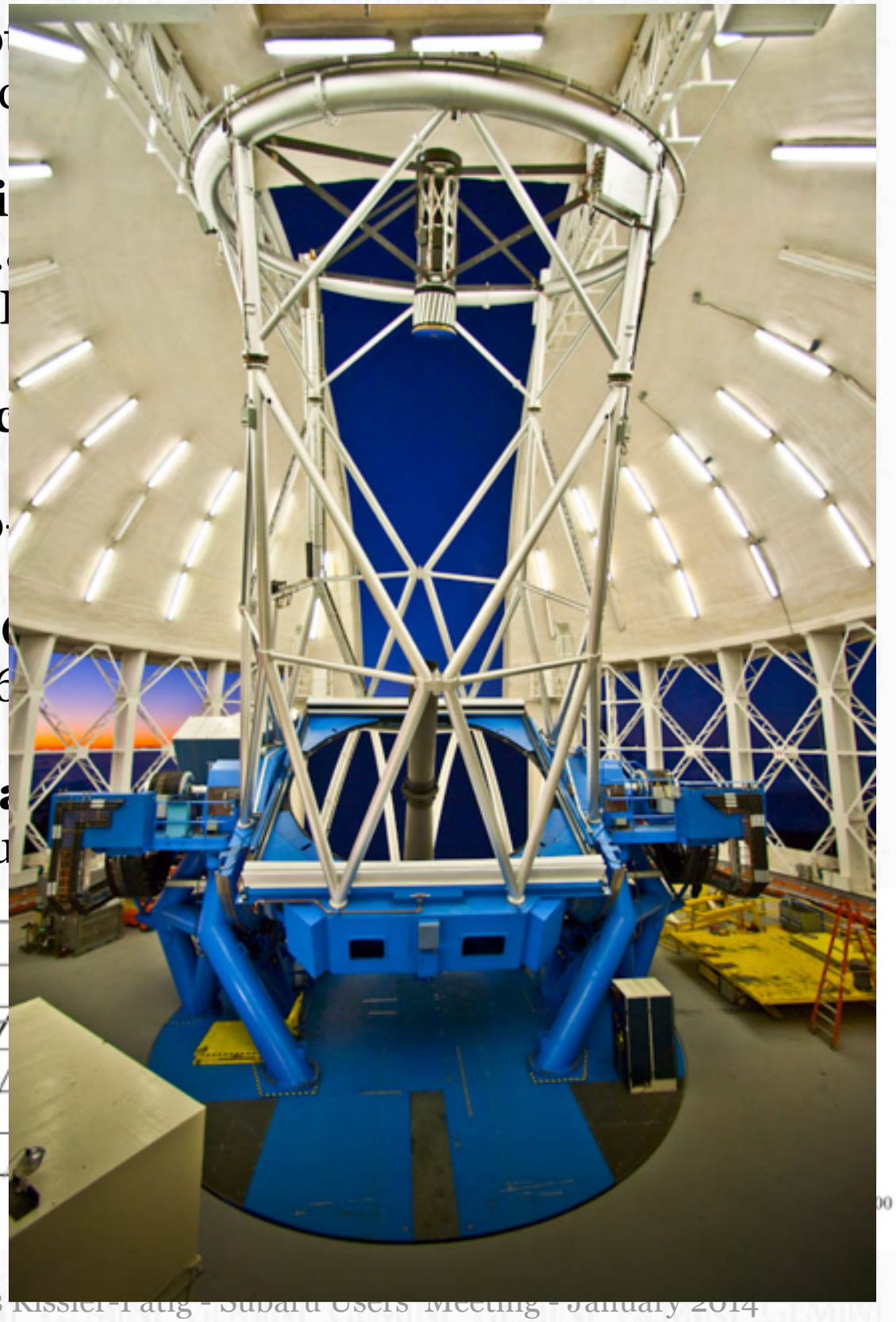
Opt
Rito

Pri
f/1.
ULE

Sec
1.0
Tip-

At C
f/16

Coa
Fou



Operating two twin 8.1m telescopes
on Mauna Kea and Cerro Pachon:
providing access to the entire sky

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Exploring the Universe, Sharing its Wonders

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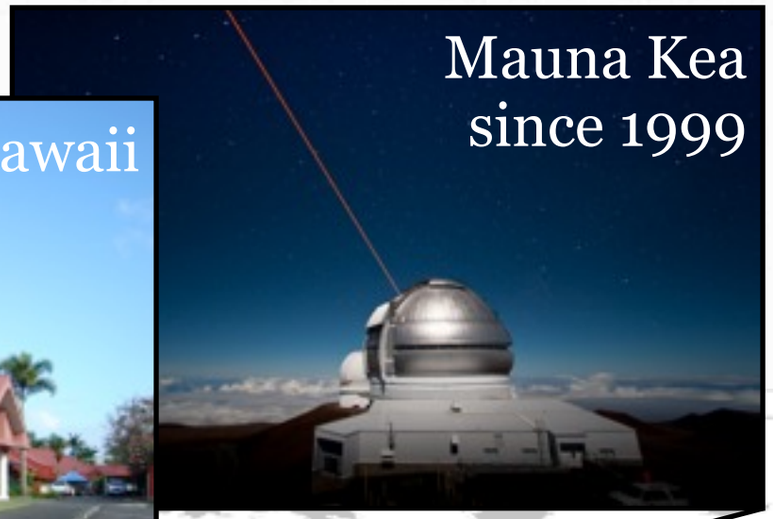

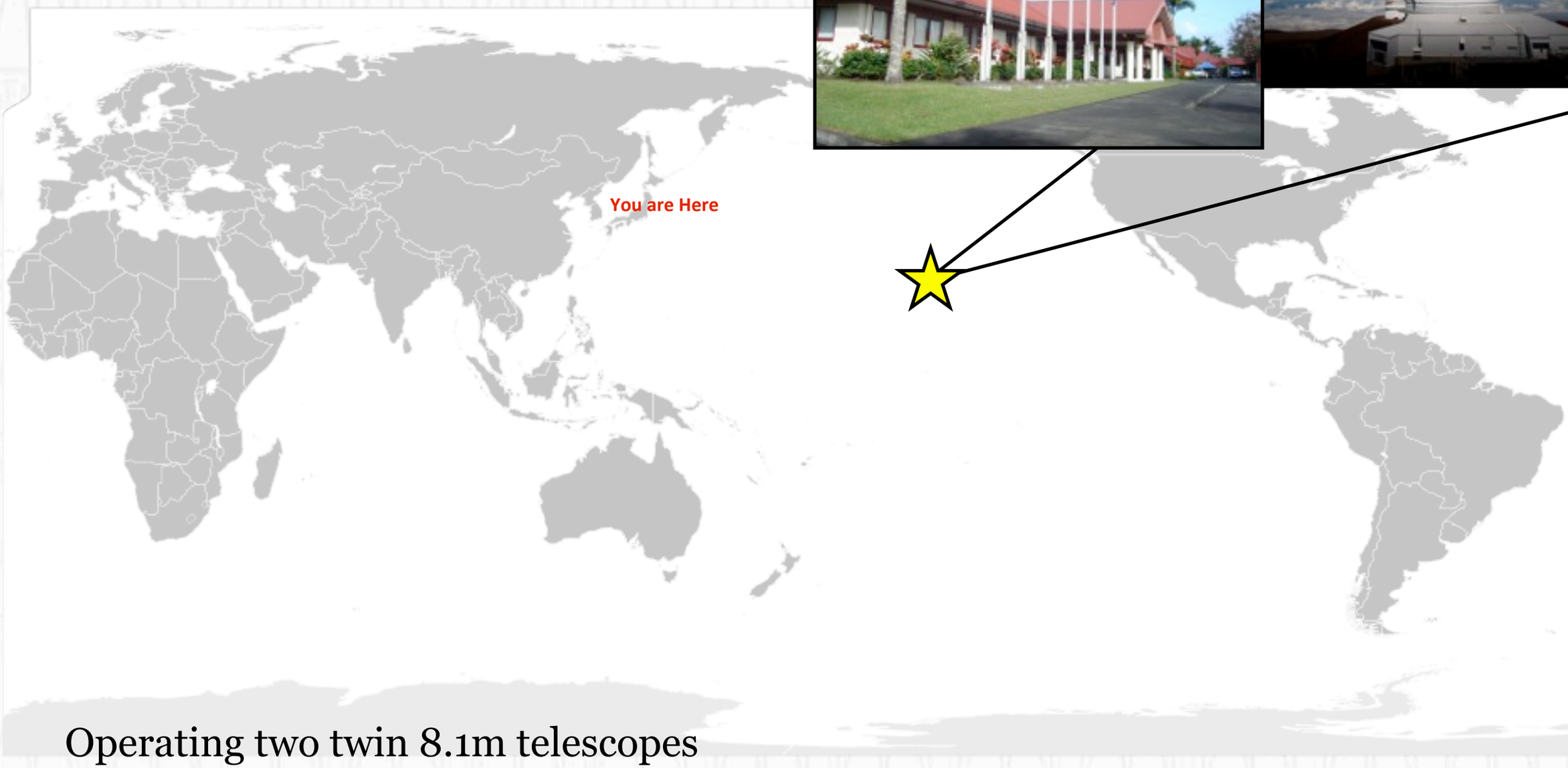

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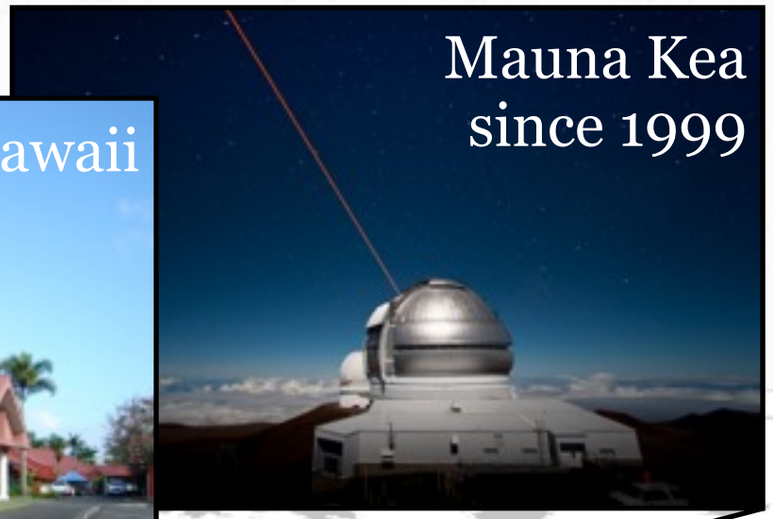
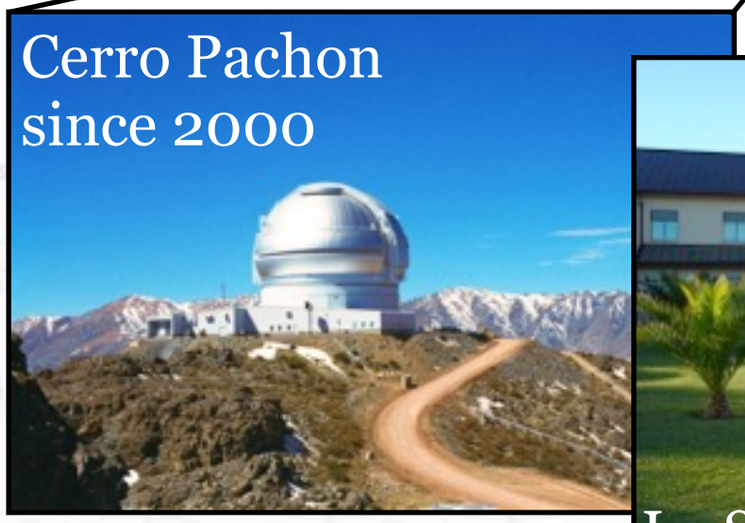


Close to Subaru and TMT

Close to ALMA and ASTE



Operating two twin 8.1m telescopes
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Instrumentation

SITE	Instrument	Wavelength range	FoV, Mode, Resolution	AO Support
Gemini **North**	GMOS-N	360-940 nm	img 5.5'x5.5' LS, MOS, IFS (5"x7") R:600-4,000	(ALTAIR)
	NIRI	1-5 µm	img 20"x20" - 120"x120" ~~LS R:500-1,000~~	ALTAIR
	NIFS	950-2400 nm	IFS (3"x3") R:5000	ALTAIR
	GNIRS	1-5 µm	LS R:1,800-18,000 (+img)	ALTAIR
2014	*(GRACES)*		see CFHT/ESPADON - high-Res spectrograph	none
Gemini **South**	GMOS-S	360-940 nm	img 5.5'x5.5' LS, MOS, IFS (5"x7") R:600-4,000	(GeMS)
	GSAOI	950-2400 nm	img 85"x85" with MCAO	GeMS
	FLAMINGOS-2	950-2400 nm	img 6.1' ∅ LS, ~~MOS~~ (2'x6') R: 1,200-3,000	(GeMS)
NEW	GPI	900-2400 nm	IFU 2.8"x2.8" contrast: 10^7 at 0.4"	XAO
TBC 2018	*(GHOS)*	360-1000 nm	2 IFUs in 7' ∅ R: 50,000 + 75,000	(None)

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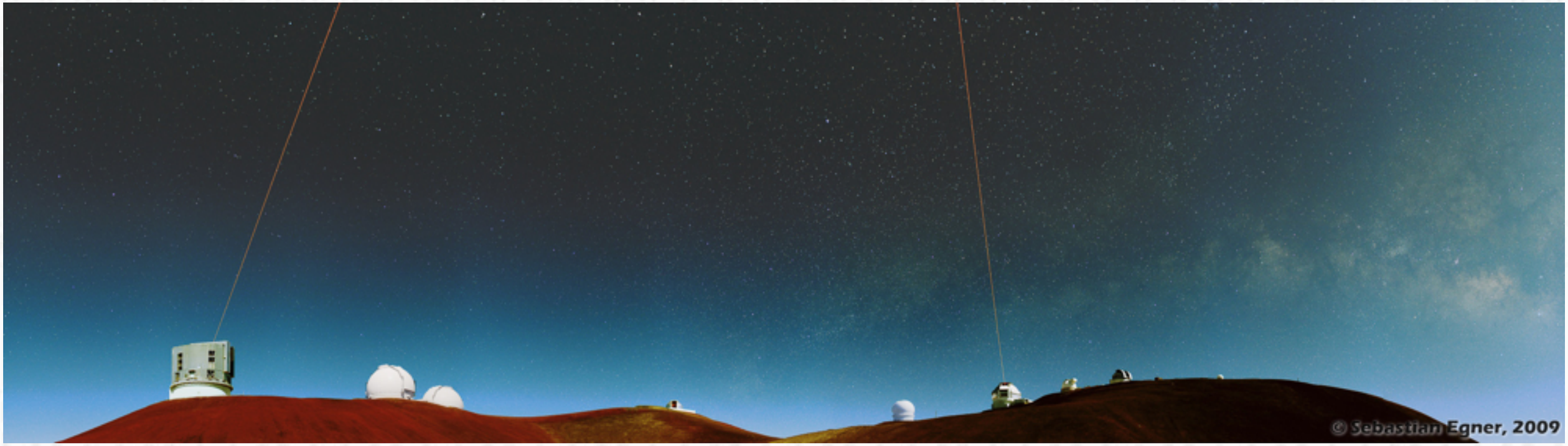
Gemini **South** TBC 2	GMOS-S GSAOI FLAMINGO GPI	360-940 n 95	0.4 0,000 + 75,000	MS) GeMS (GeMS) XAO (None)

NEW

See presentation by Scot Kleinman

(contact kleinman@gemini.edu)

Subaru-Gemini Time Exchange



Time Exchange agreement

Last year, Subaru and Gemini have expanded their formal agreement to exchange time: (almost) no limits!

The amount of time exchanged is decided on a semester by semester basis (in 2013B the proposal was for min. 5 nights)

How? Through the regular SUBARU application process

Advantages for Subaru Users:

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- Flexibility in the time domain

Advantages for Subaru Users:

- Flexibility in the time domain
- Observing the Southern Sky

Advantages for Subaru Users:

- Flexibility in the time domain
- Observing the Southern Sky
- Using Gemini's unique instruments

Flexibility in the time domain

Gemini Observing modes

You choose!

Classical Observing

You come to the telescope,
You observe
(**like at Subaru**)

Queue Observing

You define observations,
We observe
This opens the **time domain**

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You choose!

Classical Observing	Queue Observing
You come to the telescope, You observe (**like at Subaru**)	You define observations, **We** observe This opens the **time domain**

Flexibility in the time domain

You should apply for Queue Observing:

- to request (multiple) **time-critical observations**
  (transiting exo-planets; multiple epochs of variables; …)
- to request **targets of opportunities** and trigger observations to be performed within 24h
  (GRBs; supernovae; follow-up of space-based observations; …)
- (to spread targets in RA over the semester)
- Queue observing **never gets 100%** completed (but 50-90%)

If you do not need Queue, apply for Classical Observing

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See presentation by Atsuko Nita
(contact anitta@gemini.edu)

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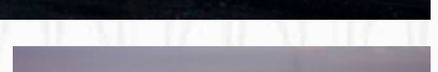
Observing the Southern Sky

Southern Sky

Subaru latitude +19°

ALMA latitude -23°



Gemini-South latitude -30°

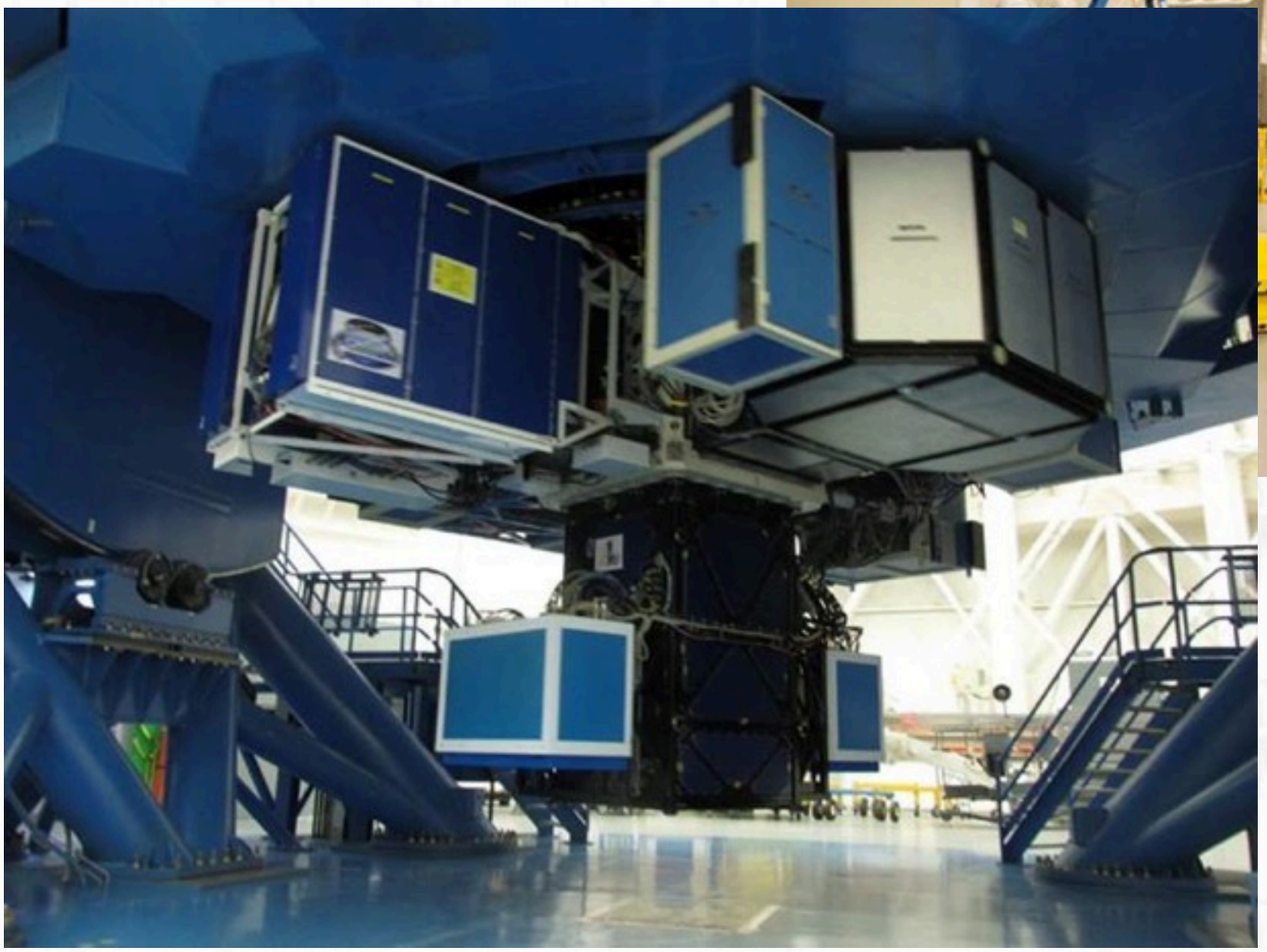
Gemini South is better suited for:

- ALMA follow-up programs
- but also ASTE, VLT, Magellan, DES, LSST, …

Gemini's Unique Instruments

Gemini Planet Imager

October 24

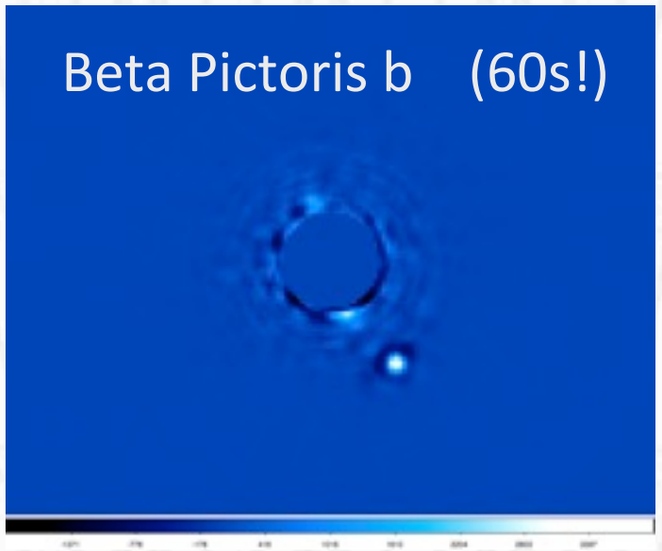


Gemini Planet Imager

Gemini Planet Imager

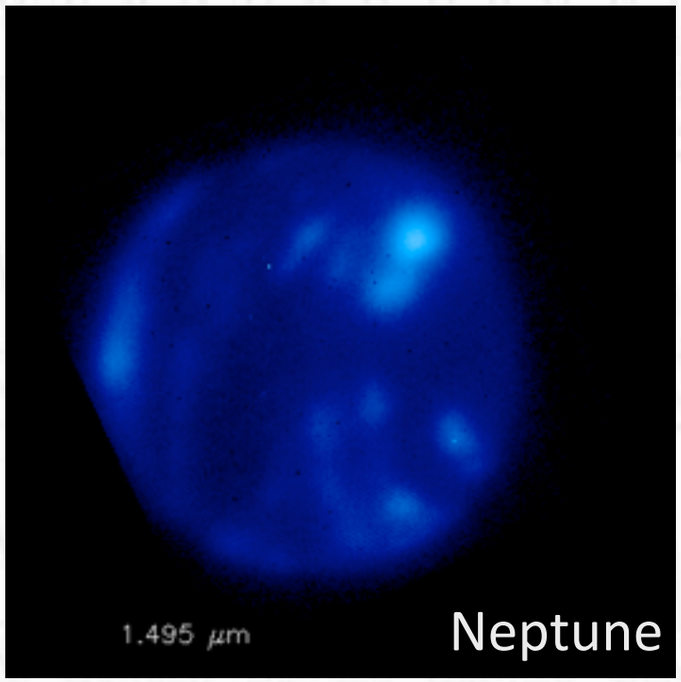
Science with GPI:

Exoplanets: detect planets in the outer regions (>5 AU) of planetary system around main-sequence stars

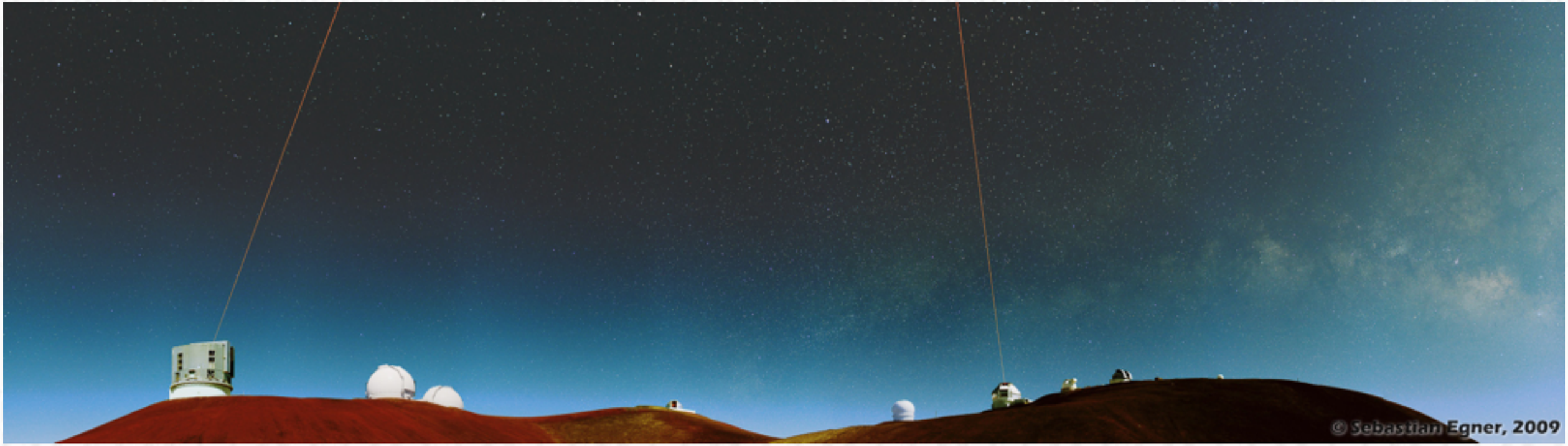


Circumstellar disks: study of polarized light from debris disks

Solar system: surface of Gas giant moons; shape and composition of asteroids; atmospheric activity of Uranus and Neptune



More Subaru-Gemini Collaboration



Our Neighbour Subaru

Subaru and Gemini share staff:

Currently we share one adaptive optics specialist;

This allows the two observatories to better communicate and to share knowledge

Subaru and Gemini are looking into sharing instruments:

As the HDS gets decommissioned at Subaru, we are looking at using it on Gemini (and offering it to Subaru users)

Program preparation

Observations

Quality control
Archiving

Data reduction

Data analysis

Publication

Proposal

Peer review
Time allocation

Idea

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Observations

Quality control
Archiving

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Original Publications

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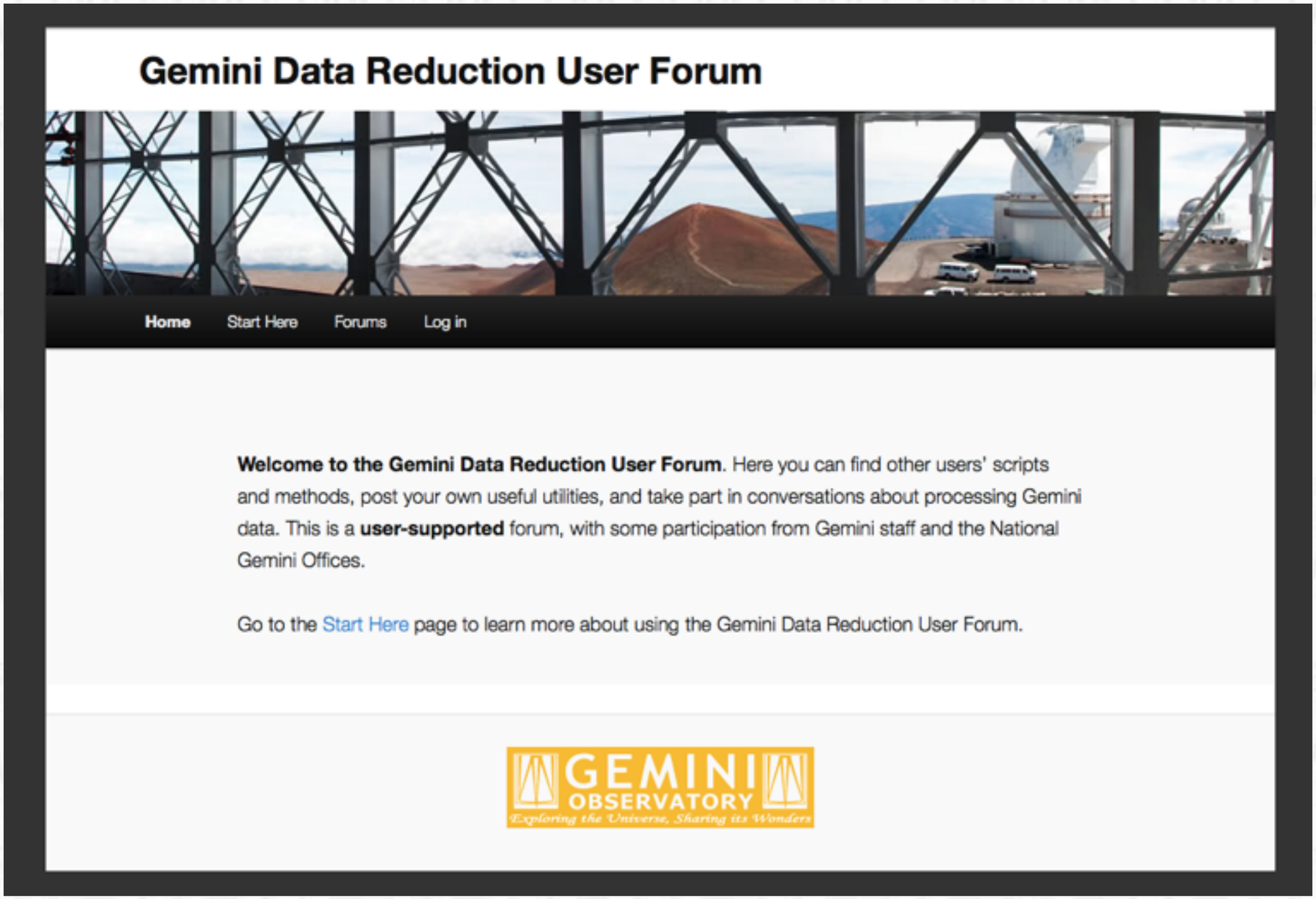
Idea

The Data Reduction User Forum



http://drforum.gemini.edu

The Data Reduction User Forum

For the Launch:

We will **award 10h/3h of Director Discretionary Time** to the best major/minor contribution posted by the end of February!

Gemini's User Committee will be the jury

Summary

The Subaru-Gemini time exchange offers a unique opportunity to join the forces of the two observatories

Of special interest to the Japanese community:

- Flexibility in the **Time Domain**
- Observing the **Southern Sky**
- Using Gemini's **Unique Instruments**

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TMT
soon

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