The Yunnan Lijiang 2.4m Telescope and Its Instrumentation

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Yunnan Observatory

NAOC CAS

Phoenix Hill

Kunming, Yunnan

Night View of Asia

location of the observing stations of Yunnan Observatory

Lijiang

Yunnan province

GaoMeiGu (GMG) station, Lijiang

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on the way to Gao-Mei-Gu (GMG) station

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Remote view of the Yulong (jade-dragon) snow mountains

GMG station, Lijiang

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Gao-Mei-Gu station

GMG station, Lijiang

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H-P comet and the Zodiac light captured at site-testing

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Astronomical observing conditions：

* Location：lon=100º2’(E) lat=26º42’(N)
* altitude: 3240m, relative height 800m
* observable nights：～ 250 /year
  bad in summer
* seeing: 0.”7-1.”4 average=0”.9
* sky background: V = 21.54 mag
  B = 22.34 mag
* extinction: V = 0.135 mag
  B = 0.298 mag
* water vapor： 4.3 mm (Oct.～April)
  13.0 mm (May～Sep.)

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Facilities at GMG station：

* 2.4m robotic telescope

* 1.05m telescope for photometric monitoring (under consideration)

Highest point：3242m

Relative height：800m

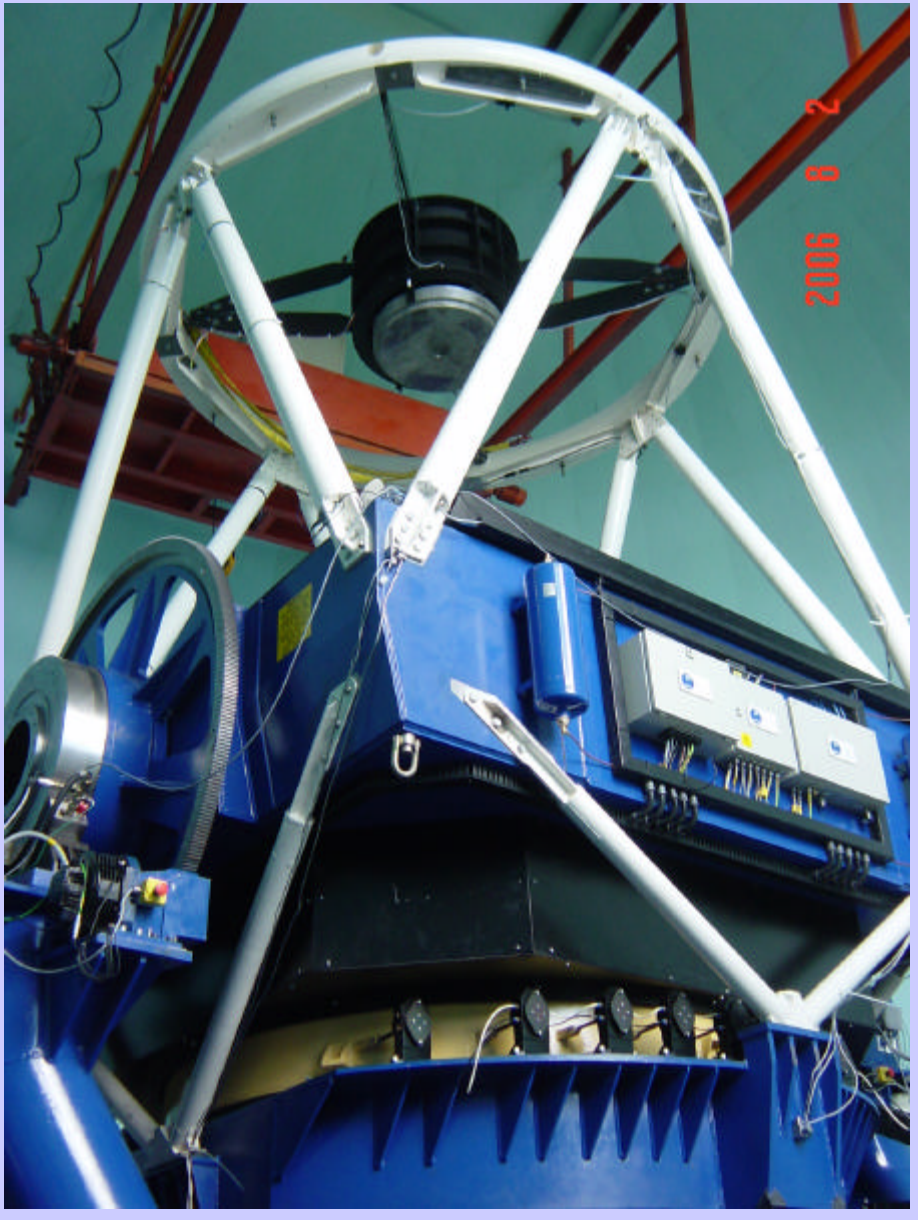
Area：17.4 acres

2.4m telescope

1.05m telescope

TTL 2.4m robotic telescope

Primary and secondary mirrors assembled last month



Specification of the TTL 2.4m Telescope

- **RC optics, Cassegrain focus / Nasmyth platform**
- **Aperture: 2.4 meters**
- **Focal ratio: F/8**
- **Image quality: <0.35" (on axis) and <0.5" (FOV)**
- **Pointing accuracy: <2"**
- **Tracking accuracy: <2" /hr (open loop) and <0.5" /hr (close loop)**
- **Fully automated, with remote control mode**

Focal instruments

Currently being built:

* imaging: 15¢ imaging camera (built at YNAO)
* spectrograph: YFOSC (also imaging)

Proposed:

Wide field camera ~40′x40′ (or 40′x20′)

Under consideration

* High resolution spectrograph optimized for exoplanet search

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GMG station, Lijiang

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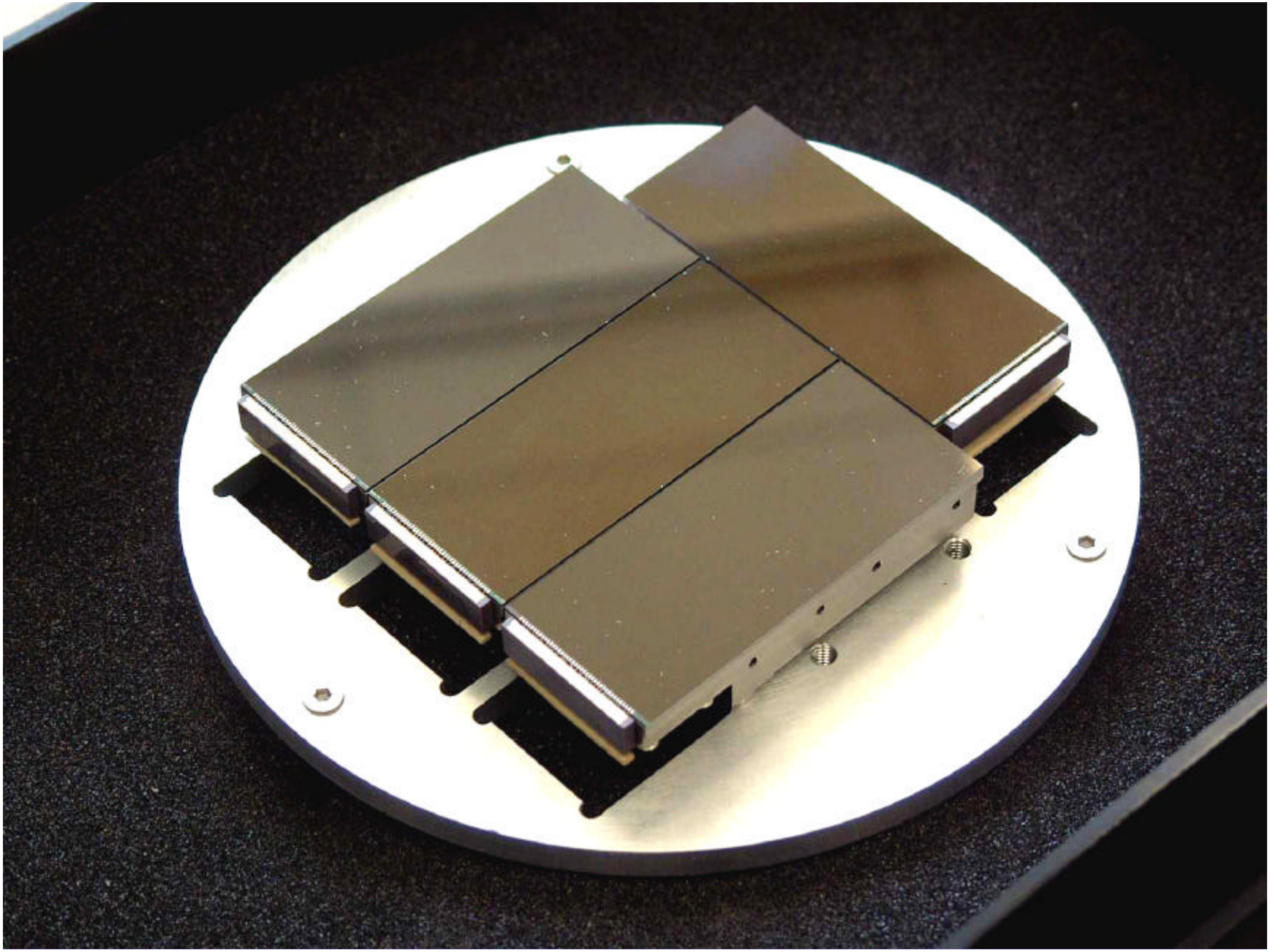
15¢ imaging camera：

6x6k, 15’ FOV

four 2K×4K EEV CCD mosaics， pixel size 15㎜， 0.15²/pixel

* High resolution imaging
* High accuracy photometry

ready for final test as an integrated unit but performance needs to be improved




PHILIPS
PC-500

YFOSC

direct imaging

Focal reduction: 0.58
(0.26^2/pixel)

Field of View: 13.6'

Limiting mag: V=24^m (10 min)

low-medium resolution spectroscopy

Wavelength Range: 330---1000 nm

Resolution: 200-4000

Limiting mag: 18^m.5 (10 min)

Being built at Copenhaken University

Available from early 2008

Telescope assembling is expected to be completed in Dec, 2006

and integrated test will start soon

Sciences with the 2.4m Telescope:

- general purpose astronomical observations
- monitoring programmes (photometric & spectroscopic)
  - g-ray burst after glow (Swift, HETE-2)
  - X-ray transients (HETE-2, MAXI)
  - global monitoring campaigns
  - monitoring of AGNs
- wide field astronomy / surveys (with WFC) ?
- etc… (XMM XID?)

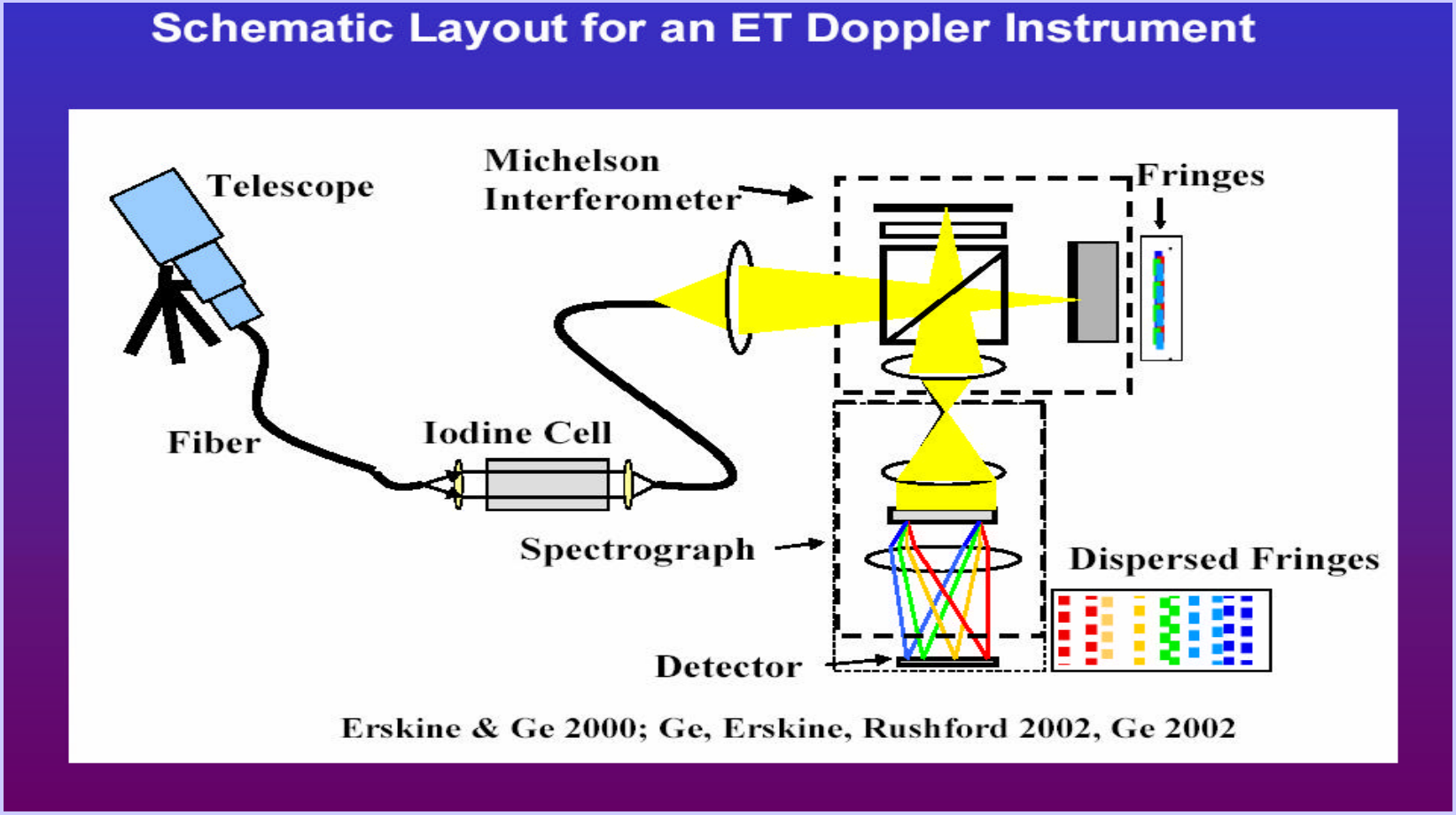
Sciences with the 2.4m Telescope:

AGN monitoring programmes (photometric & spectroscopic)

- **double-peaked/extremely broad emission line AGN**
- **Narrow-line Seyfert 1 galaxies**
- **low-luminosity AGN**
- **distant and faint blazars**
- **AGN in flaring/outburst**

Reverberation mapping observations for (re-)calibrating BH mass in AGN (in collab. With L. Ho)

Exo-planet tracker (ET)



The first extrasolar planet (ET-1, HD 102195, V=8.1, G8V) detected by Exoplanet Tracker (ET) with KPNO 0.9m Coude, confirmed by KPNO 2.1m & HET (Ge et al. 2006, ApJ in press)