



JUMP-START TIME-DOMAIN ASTROPHYSICS WITH THE TRANS-PACIFIC 2-M TELESCOPE

躍進時域天文學前沿-----以兩米望遠鏡參與「時空巡天傳世計畫」

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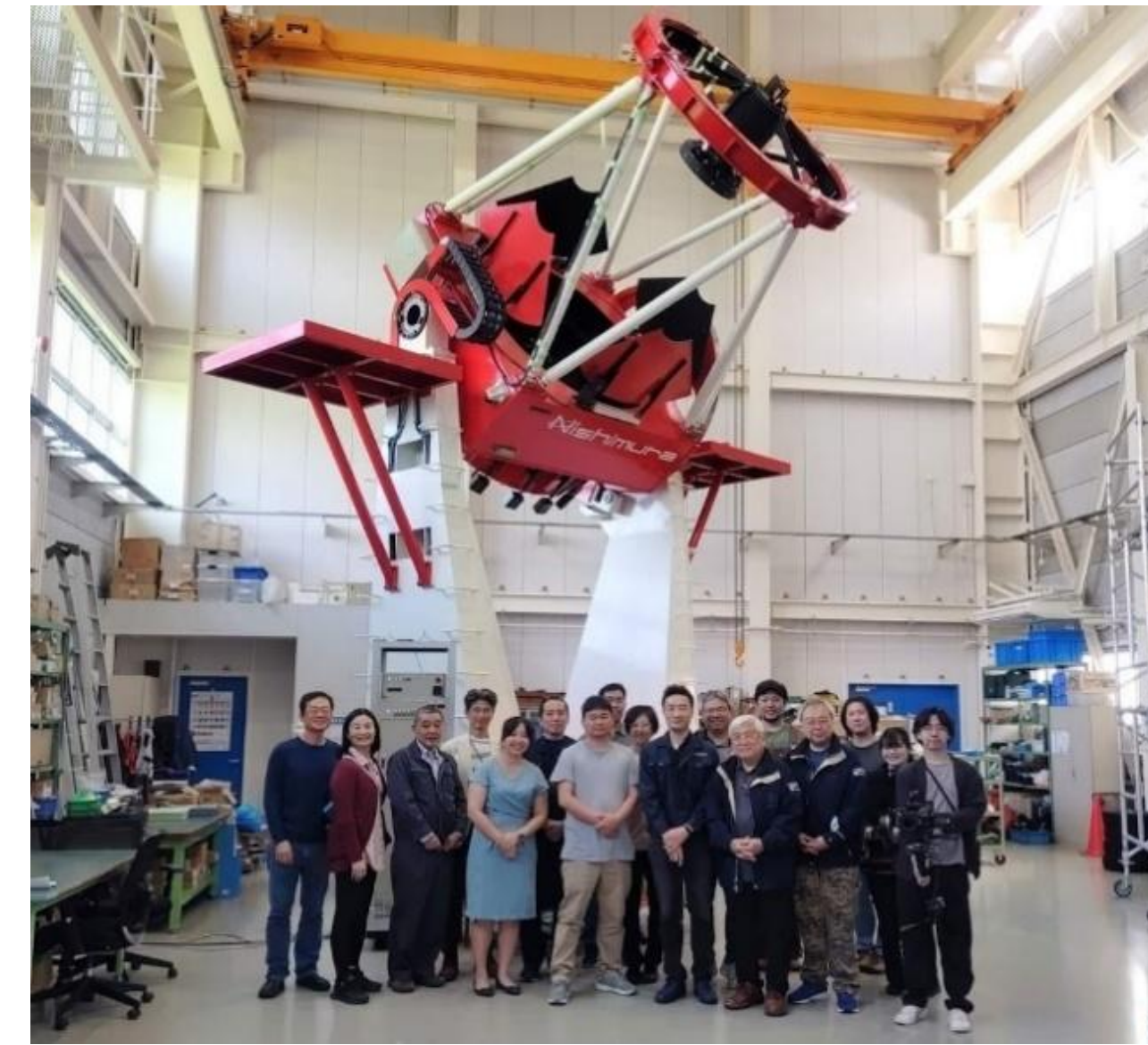
摘要 我們依照規畫在墨西哥放置兩米口徑光學望遠鏡，利用當地優良的氣候條件及現有天文臺基礎設施，本望遠鏡將成為國內重要的光學天文觀測工具，也將結合國際大規模巡天LSST計畫，研究前沿的宇宙時序現象。除了（1）中央大學，本計畫合作對象還包括（2）中央研究院天文所、（3）墨西哥自治大學、（4）上海天文臺、（5）河南科學院，以及（6）法國馬賽大學，共同分擔營運責任，並針對多項課題密切合作。

兩米光學望遠鏡



Site

- Sierra de San Pedro Mártir (SPM) in Baja California, northwestern Mexico
- 115.4637W, 31.0439N; Elevation 2800 m
- 0.6" seeing; 70% phot. nights; 80% spec. nights
- Good infrastructure

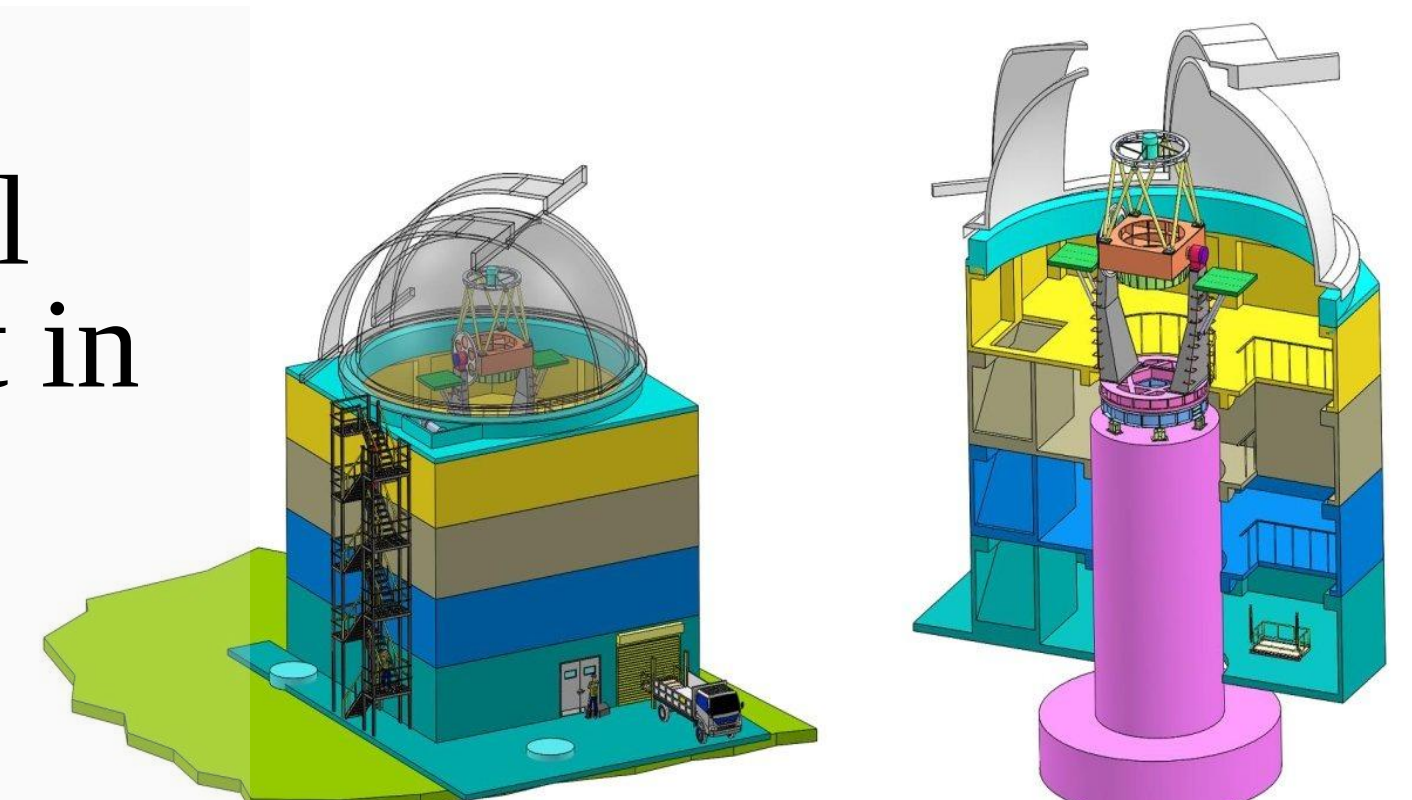


Telescope

- $D = 2$ m, $f/8$, Ritchey-Chrétien; Alt-Az
- Designed and fabricated by Nishimura Co. in Japan
- Cassegrain & Nasmyth (2) foci
- Ready for shipment to SPM in spring 2026

Enclosure & Dome

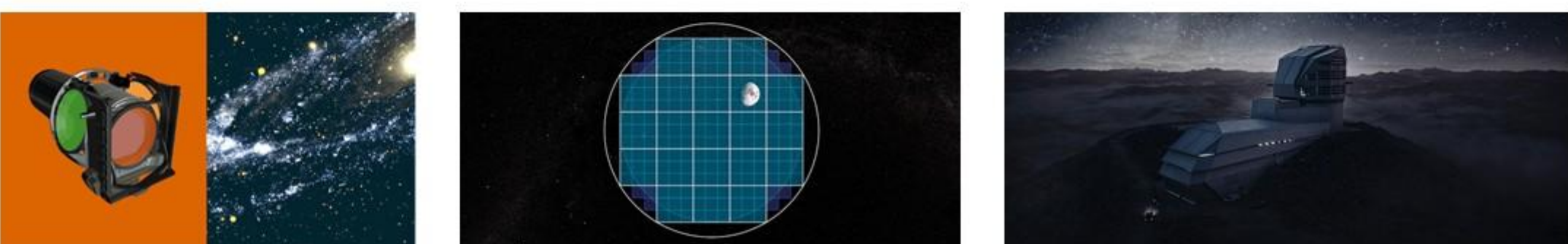
- A 4-story building, steel construction, to be built in Mexico
- Dome designed by Nishimura



The Vera C. Rubin Observatory

Legacy Survey of Space and Time (LSST)

- 位於北智利 Cerro Pachón (El=2715 m)；大氣穩定而乾燥
- 主鏡口徑 8.4 m；相機 3200 megapixels
- 重複測量 37 billion stars and galaxies 的位置與亮度
- 每晚 10 million alerts, 1000 pairs of exposures, 20 TB 數據
- 2025年底起將為天空拍攝 10 年的動畫，探索動態的宇宙

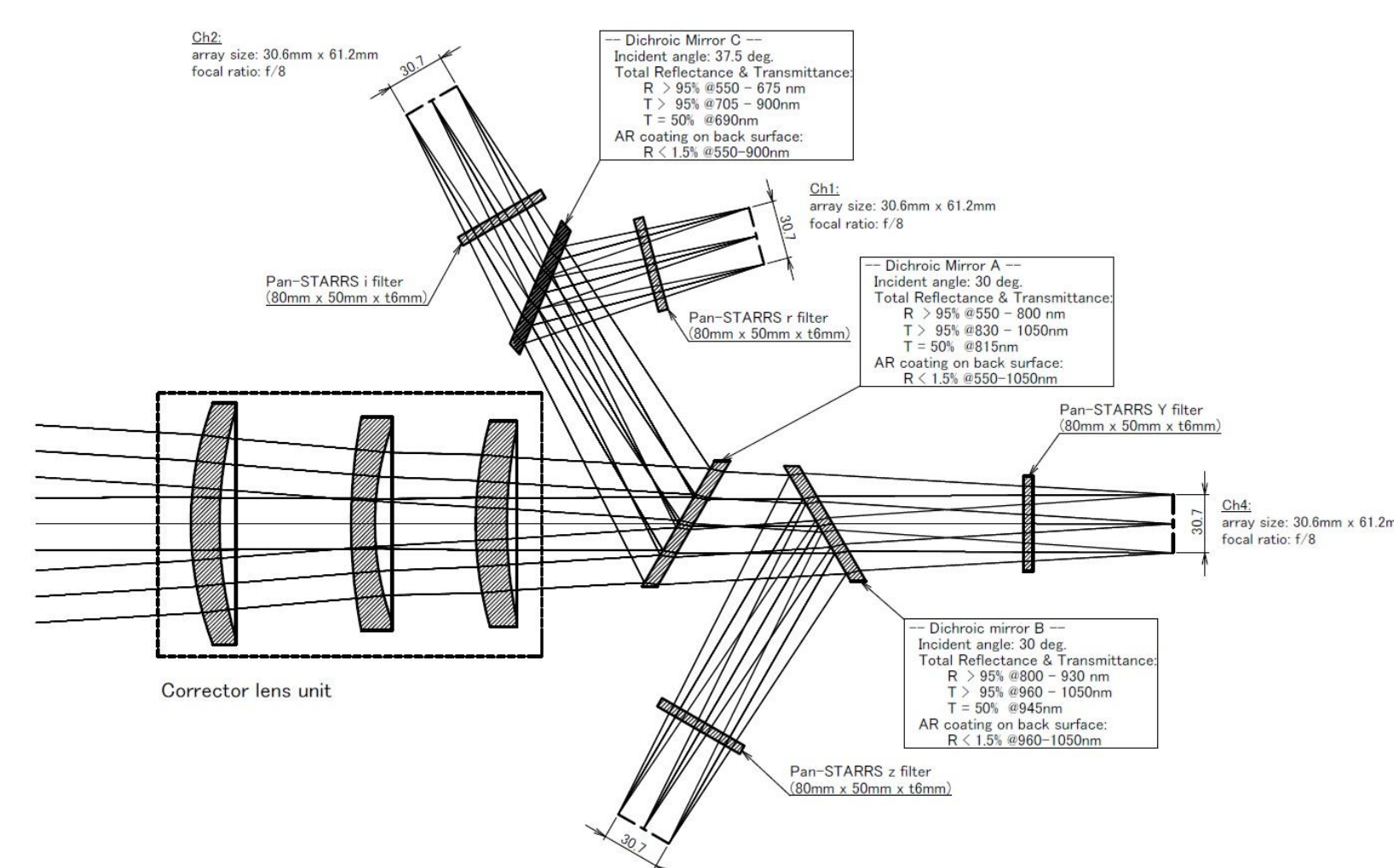


Partners

- National Central University (NCU)
- Academia Sinica Institute of Astronomy & Astrophysics (ASIAA)
- Universidad Nacional Autónoma de México (UNAM)
- Shanghai Astronomical Observatory (SHAO)
- Henan Academy of Science (HNAS)
- Aix-Marseille Université (AMU)

Science: all (30% Joint Time mainly on time-domain targets); topical collaboration.

Conceptual Design of the Instrument



First Light Instruments

- Optical simultaneous imager
Dichroic optics ($r'i'z'y'$)
SI 1100 E2V 4 K $\times$ 2 K $\times$ 15 μ m sensors
- Optical spectrograph (ESOPO)
E2V (Marconi) back-illuminated NIMO
Blue (350 to 700 nm, 2048 $\times$ 4608 $\times$ 13 μ m)
Red (550 to 920 nm, 2048 $\times$ 4096 $\times$ 15 μ m; deep depletion)
 $R = 2000 \sim 5000$ nominal slit 0.8"
< 350 kg

Future Plans

- Joint projects; coordination with COLIBRI and Lulin
- Robotic Operations
- Next-generation instruments (an integral-field spectrograph, IR, polarimeter, etc.)