

AN OVERVIEW OF MEXICAN ASTRONOMY

AND OPPORTUNITIES FOR COLLABORATION WITH THE SUBARU CONSORTIUM

Dr. Laurence Sabin

Instituto de Astronomía, UNAM · OAN San Pedro Mártir

Subaru Users Meeting · 2026



Agenda

01 The Mexican Astronomical Community

02 Science in Mexico

03 Observatories & Future Projects

04 Mexican Interest in Subaru

05 Collaboration Opportunities



The Mexican Astronomical Community

~255

Researchers
& Postdocs

19

Research
Institutions

IAU

Recognized
Members

Major institutions: IA-UNAM · IRyA-UNAM · INAOE · UdeG · UNISON · UG · UANL · UASLP + more

IA-UNAM - Leading Institution

80 researchers · 68 technical staff · 37 postdocs · 78 students · 98 associated students

Part of UNAM's international research network - active partners with USA, France, Taiwan, Spain, Germany...
Projects: GTC (OSIRIS/FRIDA), LSST, SDSS-V ...



Science in Mexico

Broad and deep research agenda spanning the full electromagnetic spectrum



Star & Planet Formation

YSOs, protoplanetary disks, accretion — Orion, Taurus, Sco-Cen



Stellar Evolution

PNe, post-AGB, massive stars, chemical abundances, clusters



Galaxy Evolution & Cosmology

$z \sim 0-3$ surveys, AGN feedback, LSB galaxies, HII regions



High-Energy Astrophysics

GRBs, KNe, SNe, GW events — COLIBRI transient facility



Solar System & Exoplanets

Asteroid taxonomy, comet spectroscopy, exoplanet atmospheres



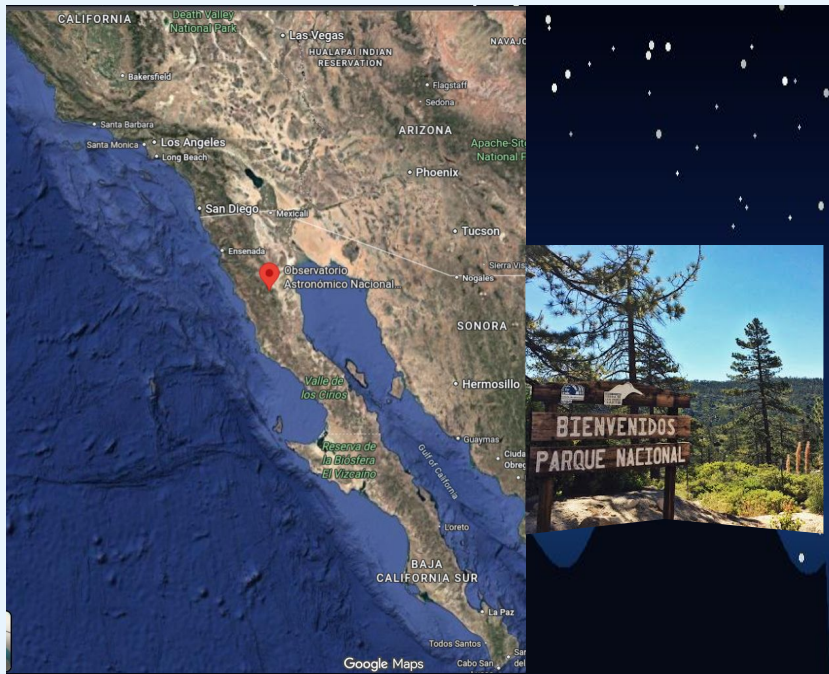
Instrumentation & Tech

Spectrographs, detectors, AO, data science & ML methods



Observatorio Astronómico Nacional — San Pedro Mártir

World-class site · 31°N · 2,800 m altitude · Baja California, Mexico



OAN-SPM · Sierra de San Pedro Mártir · Baja California

Telescopes:

11 telescopes on site

Investment:

+\$77 million USD in world-class facilities

Partners:

Taiwan, France, USA, Spain, Germany, Italy...

Site quality:

Exceptional seeing ($>0.5''$), >200 clear nights/year

Environment:

Protected National Park — minimal light pollution

Current programs: TAOS II · ESOPO spectrograph · COLIBRI · ngEHT node · TP2m



ZONE 1

ZONE 2

Observatorio
Astronómico Nacional...

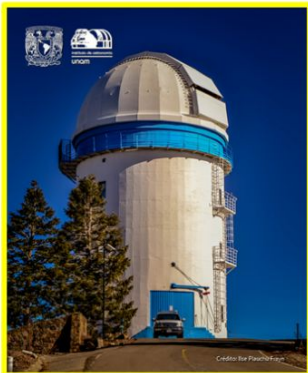
TAOS-II

Layers

3D

Zone 1

Telescopio 2.1m



Telescopio
BOOTES-5



Colibri



Telescopio .84m



Telescopio 1.5m

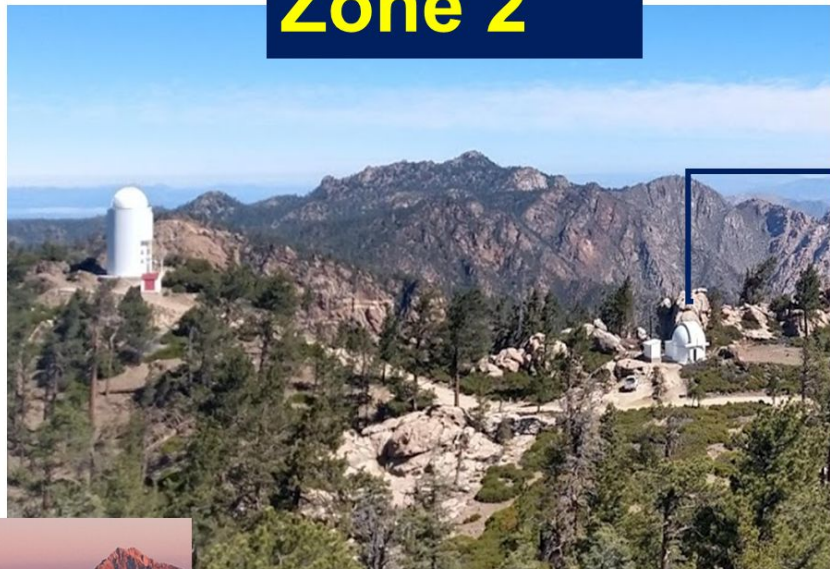


Telescopio DDOTI

Telescopio COATLI

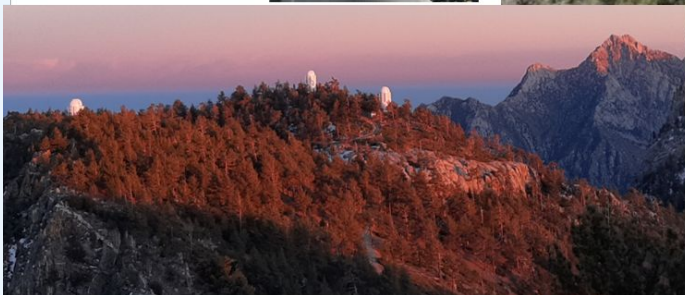
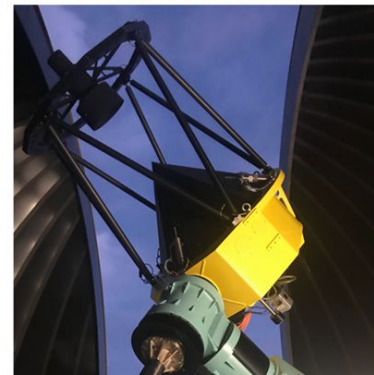


Telescopio TAOS 2



Zone 2

Telescopio Saint-Ex



Future Projects & Instrumentation

Expanding capabilities for next-generation science



TP2m - Trans-Pacific 2m Telescope

- ▶ Ritchey-Chrétien 2m, 0.35–2.5 μm , Alt-Az mount
- ▶ Partners: UNAM · NCU Taiwan · Shanghai AO · Aix-Marseille
- ▶ ESOPO spectrograph + 4-color NIR imager (NCU Taiwan)
- ▶ Science: CVs, NEOs, GRBs, KNe, SNe, AGN outbursts



ngEHT - Next-Gen Event Horizon Telescope

- ▶ OAN-SPM as key VLBI node expanding the EHT array
- ▶ Advances black hole imaging beyond M87* and Sgr A*
- ▶ Site authorized ·



High-Resolution Fiber-Fed Spectrograph (In early phase of development)

Chemical abundances · Exoplanets · Asteroseismology · Spectropolarimetry

Mexican Community Interest in Subaru

Survey across the full national community ·

47

Survey respondents

95%

Willing to be PI/co-I

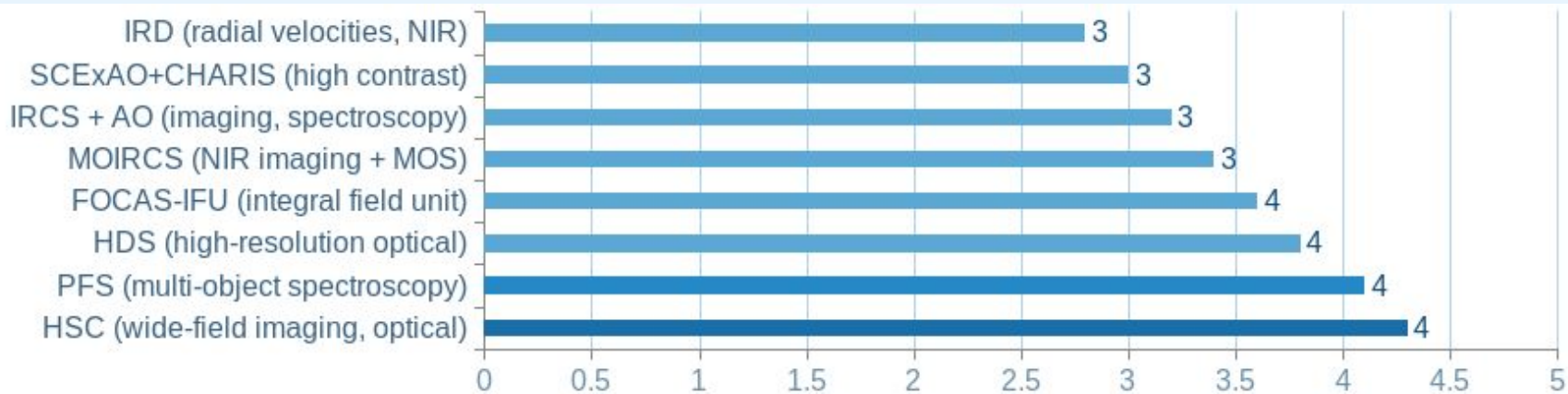
4.2/5

Avg. interest score

8+

Scientific areas

Interest per Subaru Instrument (avg. score 1–5)



Scientific Proposals Submitted to Subaru

1 Star Formation & Early Stellar Evolution

YSOs, disks, binaries | HDS + PFS + IRCS | Orion, Taurus, Sco-Cen

2 Massive Stars & Protostellar Clusters

High-res imaging/spectroscopy of embedded clusters | IRCS+AO · MOIRCS

3 Evolved Stars & Planetary Nebulae

Chemical abundances, kinematics, magnetic fields | HDS · FOCAS-IFU · IRCS

4 Galaxy Evolution Across Cosmic Time

IFU survey $z \sim 0.15-3$, AGN feedback, LSB dwarfs | PFS · FOCAS-IFU · HSC

5 AGN Physics & Large-Scale Structure

Ionized outflows, metallicities, AGN populations | FOCAS-IFU · HDS · PFS

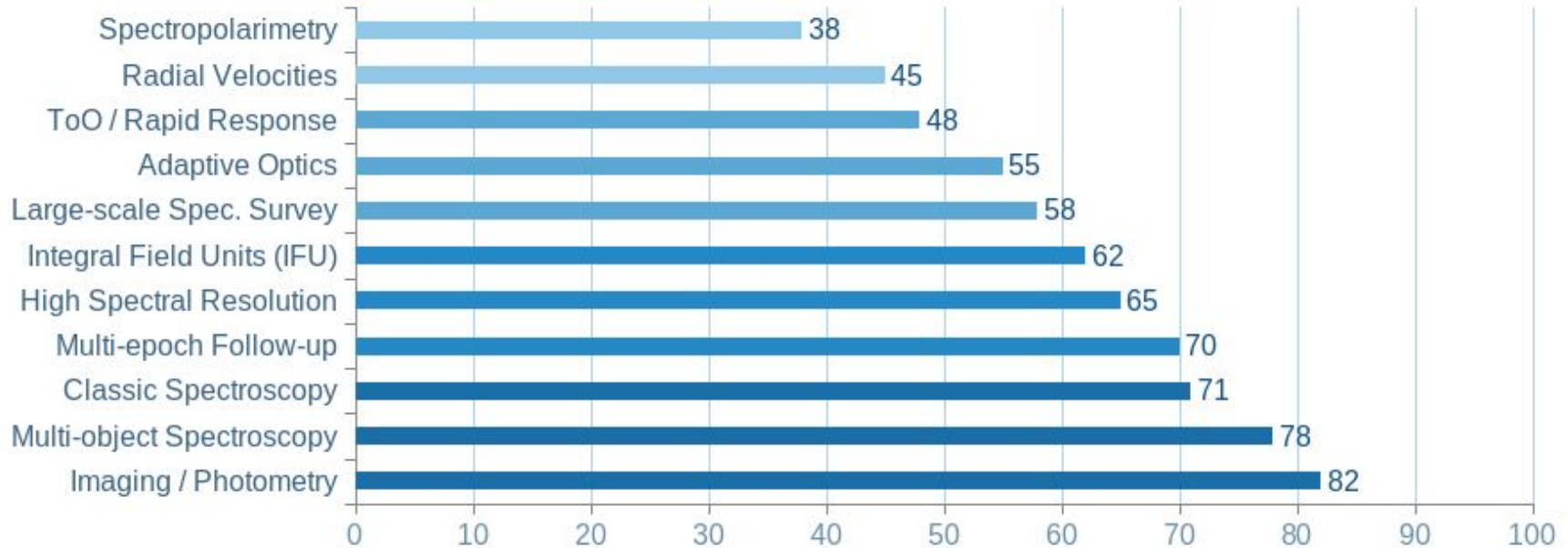
6 Solar System, Exoplanets & Stellar Populations

Asteroid taxonomy, exoplanet atmospheres, globular cluster chemistry | HDS · SCExAO



Requested Observation Modes

Scientific diversity of Mexican proposals



Collaboration with Subaru Consortium



World-Class Observatory

OAN-SPM: 11 telescopes, 2.800 m, exceptional dark sky and site quality



Vibrant Scientific Community

~255 researchers across 19 institutions · IAU-ranked globally · proven multi-national collaborations



Strategic New Projects

TP2m · ngEHT node · COLIBRI — direct synergies with Subaru time-domain and survey science



Collaboration Track Record

Active partners with NCU Taiwan, France, USA, Spain — deep experience in joint instrumentation



Instrumentation Expertise

Spectrographs, detectors, AO, software pipelines — joint Subaru-compatible development



Ready to Lead Proposals

95% of survey respondents willing to serve as PI or co-I — community eager from day one

Collaboration Pathways

How Mexico and the Subaru Consortium can work together

Science Time Allocation

- ▶ Competitive access for Mexican PIs and co-Is
- ▶ Joint proposals across the full Subaru instrument suite
- ▶ Priority on HSC wide-field surveys and PFS multi-object programs

Instrumentation & Technology

- ▶ Joint development of new instruments or upgrades
- ▶ Shared expertise: optics, detectors, AO, software

Training & Capacity Building

- ▶ Student, postdoc, and engineer involvement and exchanges
- ▶ Subaru workshops, schools, data reduction collaboration
- ▶ Data science collaboration

Strategic Science Synergies

- ▶ TP2m time-domain + Subaru spectroscopic follow-up
- ▶ OAN-SPM ngEHT node: co-located VLBI infrastructure
- ▶ COLIBRI/GRB ToO + Subaru rapid-response imaging

The Mexican astronomical community is

Eager and Ready to work with Subaru

Next Step: 2027A

We look forward to building lasting partnerships with the Subaru Consortium.