

# COSPAR Capacity Building Activities

**CARLOS GABRIEL AND THE COSPAR PANEL ON CAPACITY BUILDING**

# Committee On SPace Research (COSPAR)

Established in 1958 by the ICSU to promote research in space

## COSPAR Statement of Principles

The **Principles** that COSPAR adheres to in pursuit of its Mission are:

- COSPAR **promotes scientific research in space** at an international level, with emphasis on the **exchange of results, information**, and opinions, and provides a forum, open to all scientists.
- COSPAR endeavors to ensure that a vibrant international space research effort can be conducted **without impediment from geopolitical tensions** or differences.
- COSPAR requires that presentations at its meetings and publications in its journals are the **result of scientific research** that was conducted with the **highest ethical standards**.
- COSPAR **discloses any financial support** that might be perceived as influencing its activities or positions it might advocate.
- COSPAR **promotes diversity and gender equality** in all of its activities, and will not tolerate any form of discrimination or harassment.
- COSPAR encourages **meaningful roles** in all activities for **younger scientists**, who are the future of international space research.

46 national scientific institutions + 13 international scientific unions



# The COSPAR Panel on Capacity Building

Carlos GABRIEL  
COSPAR - Germany  
PCB Chairman



Denise PERRONE  
ASI - Italy  
Solar Physics



Jérôme Benveniste - Ex-ESA  
COSPAR - France  
Earth Observations



Marie Chantale DAMAS  
GMU - USA  
Small Satellites



Diego ALTAMIRANO  
UNIV. SOUTHAMPTON - UK  
Astronomy



Alexi GLOVER  
ESA - the Netherlands  
Diversity, Equity and Inclusiveness



Dieter BILITZA  
GMU - USA  
Ionosphere



Mpho TSHISAPHUNGO  
SANSA - South Africa  
Space Weather



Nimit KUMAR  
INCOIS - India  
Oceanography



Randall SMITH  
CfA - USA  
Funding & Sponsorships



## Fellowship & Alumni

Mariano MÉNDEZ  
UNIV. GRONINGEN - the Netherlands  
F&A Chairman



Antonio Geraldo FERREIRA  
UNIV. do CEARÁ - Brazil  
F&A ViceChairman

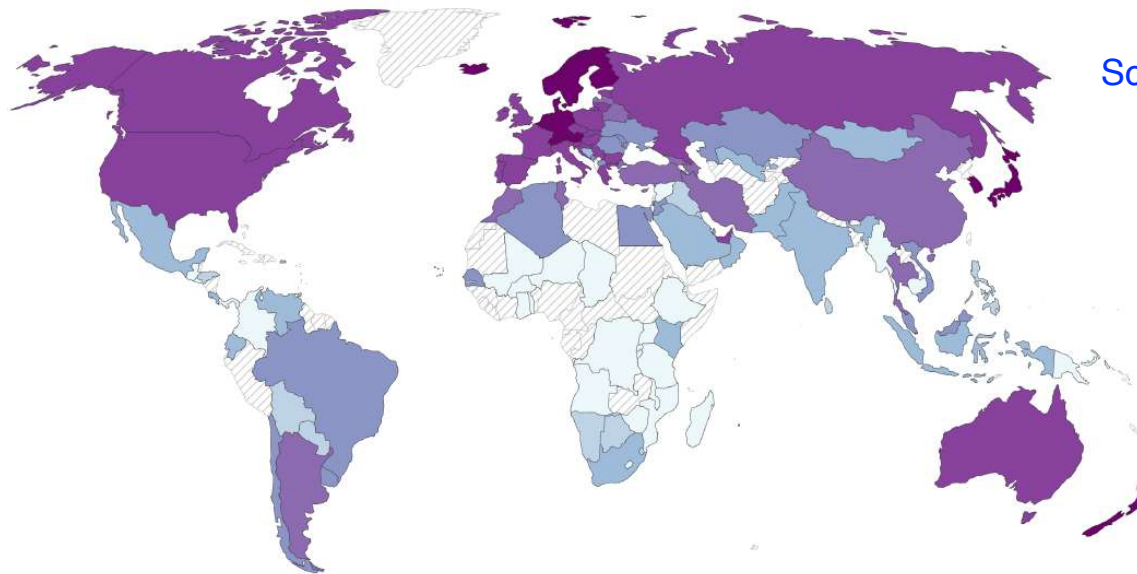


# Scientific research - where. how, why?

## Number of R&D researchers per million people, 2019

Professionals engaged in conceiving or creating new knowledge, products, processes, methods, or systems.

Our World  
in Data



Science is fundamental for a **developing country**

- \* Basic science >> applied sciences >> health >> education
- \* Fundamental right to a share in the “scientific knowledge”

Space Sciences are  
important

*motivation, public interest, vision* unique in this domain  
generally expensive

- \* however participation on different scales is possible  
>> scientific instruments, **research**, education

Data source: Multiple sources compiled by World Bank (2024)

OurWorldInData.org/research-and-development | CC BY

Note: Postgraduate students are included.

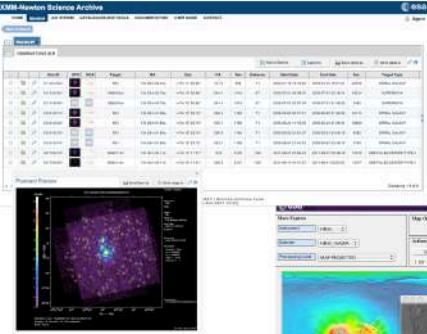
# Fostering science excellence in developing countries



Prof. P. Willmore (1931-2021)

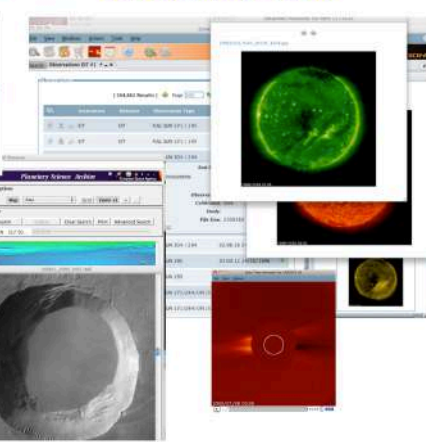
*encouraging **scientists** in developing countries to use **scientific data** from **space missions***

X-ray Astronomy - XMM-Newton

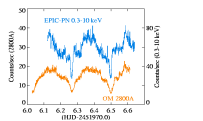
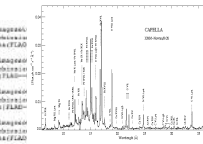
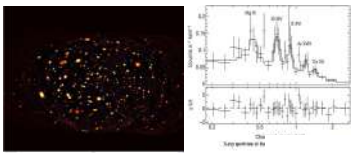
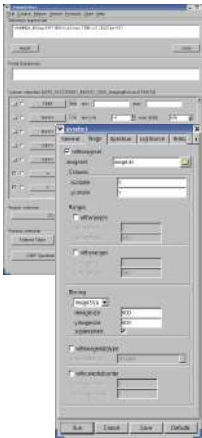


Vast amounts of data, (pre-)processed, offered publicly through modern archives

Solar Observatory - SOHO



Exploration - Mars express



*instructing **practically** students in the usage of **archives** and **associated analysis software***

*promoting **professional bonds** between workshop participants and experienced **international scientists**, reducing **isolation***



# CBP: Capacity Building through practical workshops

- 35-40 students and 10-13 full time lecturers / supervisors
- brief (2 weeks) intensive workshops (60 h/week)
- 1/3 lectures - 2/3 hands-on data analysis
- projects carried out individually or in teams
- ends with presentation by each student on analysis & results



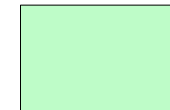
# Components of a COSPAR CB Workshop

Day / Date												
Sun	16-Nov	Arrival & Registration										
		9:00 - 10:00	10:00 - 11:00		11:15 - 12:15		13:15 - 14:15	14:15 - 15:15		15:30 - 16:30	16:30 - 17:30	17:30 - 18:30
Mon	17-Nov	Opening Ceremony	An Intro to High Energy Astronomy Mariano Mendez	Coffee Break	X-ray detectors Matteo Guainazzi	Lunch Break	The Missions I - XMM S/C & Instruments Carlos Gabriel	The Missions II - Chandra S/C & Instruments Doug Burke	Coffee Break	The Missions III - Suzaku S/C & Instruments Yukikatsu Terada	Data Reduction I - Introduction to SAS Carlos Gabriel	Computer Class Setting up SAS, CIAO and FTOOLS
Tue	18-Nov	Data Reduction II - Introduction to CIAO Doug Burke	Data Reduction III - FTOOLS + Suzaku dedicated S/W Yukikatsu Terada		X-ray Spectrum Analysis I - Low-resolution Spectra Keith Arnaud		X-ray Spectrum Analysis II - High-resolution Spectra Doug Burke	Data Red. IV - A more detailed look at SAS Matteo Guainazzi		Computer Class Project	Computer Class Project	Computer Class Project
Wed	19-Nov	Timing Analysis I Diego Altamirano	Source Searching Methods Carlos Gabriel		X-ray Emission Mechanisms I Elena Jiménez-Bailon		Cataclysmic Variables / Novae / White Dwarfs Kim Page	Astrophysical Plasmas Mariano Méndez		Computer Class Project	Computer Class Project	Computer Class Project
Thu	20-Nov	AGNs I Matteo Guainazzi	Accretion Sources I Black Holes and Neutron Stars Mariano Mendez		Galaxies, Clusters and Groups I Keith Arnaud		X-ray Emission Mechanisms II Elena Jimenez-Bailon	Spectral Timing Studies & adding NuStar to the Missions' Suite Diego Altamirano		Computer Class Project	Computer Class Project	Computer Class Project
Fri	21-Nov	Accretion Sources II Black Holes and Neutron Stars Diego Altamirano	AGNs II Matteo Guainazzi		Galaxies, Clusters and Groups II Keith Arnaud		Timing Analysis II Diego Altamirano	ISM & SNR Doug Burke		Computer Class Project	Computer Class Project	Computer Class Project
Sat	22-Nov	Excursion to San Pedro Mártir Observatory										
Sun	23-Nov											
Mon	24-Nov	Statistics Mariano Méndez	Future Development of X-ray Astronomy Keith Arnaud	Coffee Break	Computer Class Project	Lunch Break	Computer Class Project	Computer Class Project	Coffee Break	Computer Class Project	Computer Class Project	Computer Class Project
Tue	25-Nov	Extragalactic Surveys Takamitsu Miyaji	Writing Proposals Elena Jiménez-Bailon		Computer Class Project		Computer Class Project	Computer Class Project		Computer Class Project	Computer Class Project	
Wed	26-Nov	Basics of Scientific Presentation Carlos Gabriel	Computer Class Project		Computer Class Project		Computer Class Project	Computer Class Project		Computer Class Project	Computer Class Project	
Thu	27-Nov	Computer Class Project	Computer Class Project		Computer Class Project		Computer Class Project	Computer Class Project		Computer Class Project	Computer Class Project	
Fri	28-Nov	Computer Class Project	Project Presentations		Project Presentations		Project Presentations and Closing Meeting					

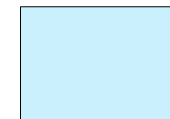
Example: Advanced School on X-ray Astrophysics (Ensenada, Mexico, 2014)  
“Data Analysis of the XMM-Newton, Chandra and Suzaku Missions”



Science (32%)



Mission specific (11%)



Project (57%)

# COSPAR Capacity Building Fellowship Program

Launched in 2009



To build further on skills gained in a workshop, through a visit (~ 2-6 weeks) to carry on joint research in a collaborating lab

Not for training purposes, but intended to foster **research collaborations**

So far 82 short internships in scientific centres of excellence - ending in many cases with publication in main journal



# All space science disciplines

Starting with X-ray astronomy

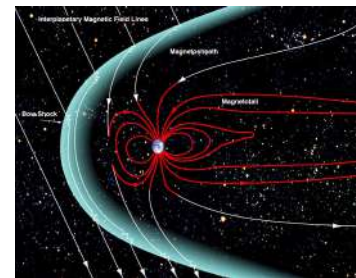
... to space crystallography

Through all space science disciplines

Astrophysics



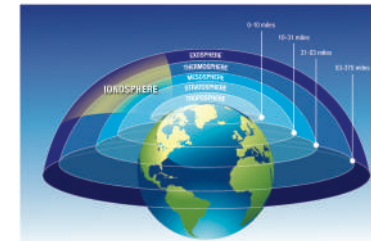
Magnetospheric Physics



Solar Physics



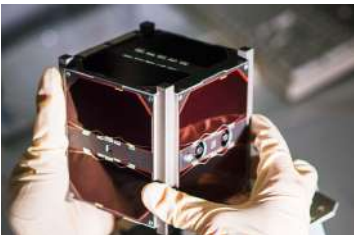
Ionosphere



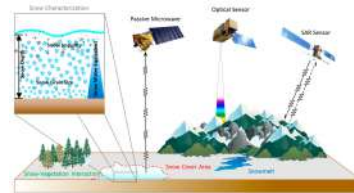
Planetary Science



Earth Observation



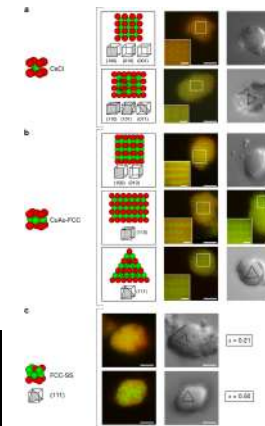
Small Satellites



Remote Sensing

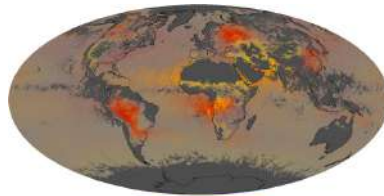
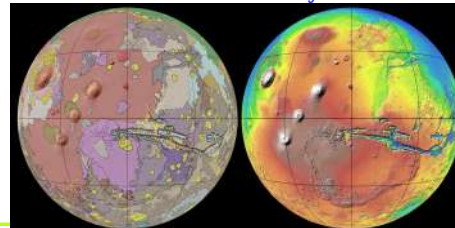


Oceanography



Space Crystallography

Lunar and Planetary Surface



Aerosol Physics



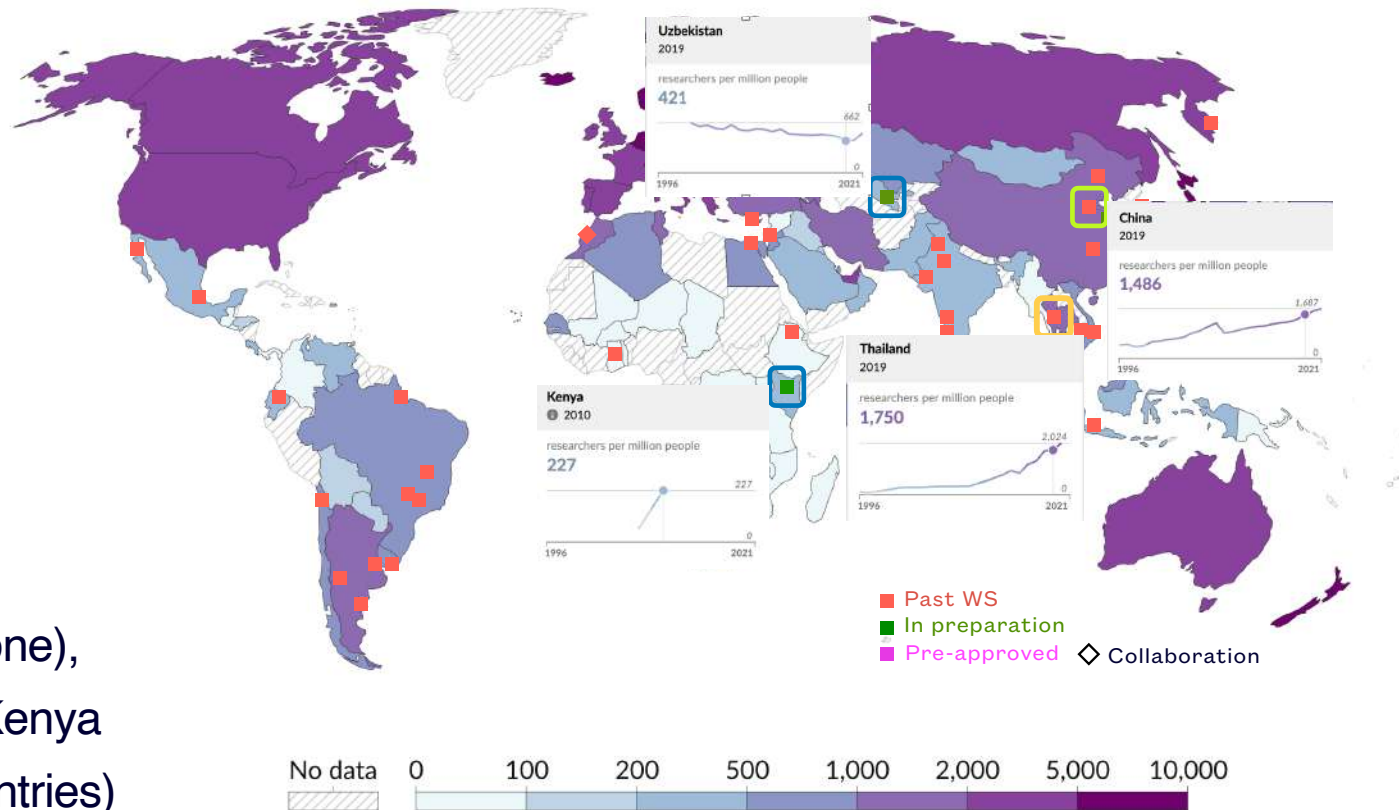
Space Weather

# Until 2024: 24 years

44 highly practical workshops in 22 developing countries

More than 1250 students from more than 70 countries + 82 fellowships

4 in 2024 - Thailand (done), China, Uzbekistan and Kenya (both adding to list of countries)



Data source: Multiple sources compiled by World Bank (2024)  
Note: Postgraduate students are included.

[OurWorldInData.org/research-and-development](https://OurWorldInData.org/research-and-development) | CC BY

# List of workshops & Fellowships 2001-2023

#	Year	Topic	Missions	#	Year	Topic	Missions	Where?	Fellows
				23	2015	Earth Observation of Transboundary Water Resources	MODIS, GRACE, GPM/TRMM, SMAP, ERS, ENVISAT, SMOS, Sentinels.	Ho Chi Minh City, Vietnam	
				24	2015	Planetary missions data analysis	Mars-Express, Rosetta, Cassini, Hayabusa	Guaratinguetá, Brazil	2
1	2001	X-ray Astronomy	Chandra, XMM-Newton	25	2015	International Reference Ionosphere	CHAMP, GRACE, ROCSAT, TIMED, COSMIC, C/NOFS, GPS	Bangkok, Thailand	
2	2003	X-ray Astronomy	Chandra, XMM-Newton	26	2016	Crystallography for Space Sciences	Curiosity, Mars-Express	Puebla, Mexico	
3	2004	Magnetospheric Physics	Cluster	27	2016	Space Weather School	GPS, Chibis, Vernov, + ground-based data	Kamtchatka, Russia	5
4	2004	X-ray Astronomy	Chandra, XMM-Newton	28	2017	Soft- and Hard X-ray Astronomy	Chandra, XMM & NuStar	Viedma, Argentina	2
5	2005	Space Oceanography	GEOS	29	2017	Ionospheric Monitoring, Modelling and Predictions	COSMIC and other GNSS	Taipei City, Taiwan	
6	2007	Solar-#							
7	2007	Planets							
8	2008	X-ray A		44	June 2024	Visible and Infrared Astronomy "JWST Data Analysis and Processing Workshop"	JWST	Chiang Mai, Thailand	3
9	2008	Optical							
10	2009	Lunar &							
11	2010	Gamma		45	August 2024	Solar Physics - "Coronal and Interplanetary Shocks"	SOHO, STEREO, SDO, Wind	Samarkand, Uzbekistan	4
12	2010	Earth c							
13	2011	Earth c							
14	2011	X-ray A		46	August 2024	X-ray Astrophysics "A new era of High Resolution X-ray spectroscopy"	XMM-Newton, Chandra, Xrism	Fudan, China	1
15	2011	EO: Ad							
16	2012	Remote Chang							
17	2012	Infrared							
18	2013	X-ray A		47	Sep 2024	International Reference Ionosphere - Improved Real-time Ionospheric Predictions	COSMIC I and II, GPS, GLONASS, Galileo, and Beidou	Kilifi, Kenya	2
19	2013	Atmos							
20	2014	Matching Oceanographic Problems of the Indonesian Seas (ITF)				(Collaboration with PORSEC)			
21	2014	Remote sensing: water cycle & climate change	ESA + NASA EO-DBs	41	Jan 2023	Planetary missions data analysis	New Horizons, Juno, Hayabusa, Rosetta	Antofagasta, Chile	
22	2014	X-ray Astronomy	Chandra, XMM & Suzaku	42	Feb 2023	COSPAR - IAU-I-HoW X-ray Astrophysics	XMM-Newton, NICER, NuSTAR	Potchefstroom, South Africa	3
				43	May 2023	International Reference Ionosphere - Improved Real-time Ionospheric Predictions	COSMIC I and II, GPS, GLONASS, Galileo, and Beidou	Daejeon City, South Korea	1

COSPAR Capacity Building Activities | COSPAR WS on Solar Physics - 19/8/24 - Samarkand, Uzbekistan - Carlos Gabriel

# January 2023 - Planetary Sciences in Chile

**COSPAR**

Data Analysis for Planetary Sciences

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**COSPAR CAPACITY BUILDING WORKSHOP  
PLANETARY SCIENCES DATA ANALYSIS**  
Universidad Católica del Norte  
ANTOFAGASTA CHILE

## Key Dates

2022-10-15	Application deadline
2022-11-11	Notification of grants
2022-11-18	Notification for waiting-list openings (if any).



# February 2023 - X-ray Astrophysics in South Africa



**X-VISION 2023**

Home Organizers & Sponsors Highlights Programme Venue Registration

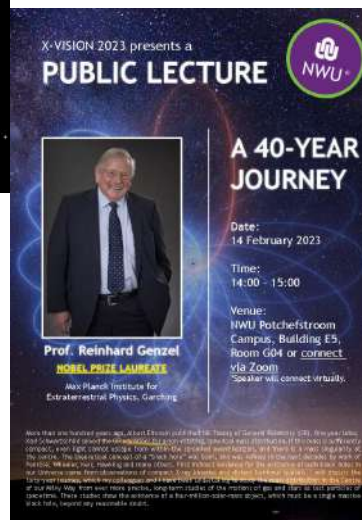
## X-VISION 2023

**X-ray Vision of the Energetic Universe**

A Joint IAU I-HOW and COSPAR Capacity Building Workshop in X-ray Astronomy

**February 06-17, 2023**

North-West University Potchefstroom, South Africa

X-VISION 2023 presents a  
**PUBLIC LECTURE**

**Prof. Reinhard Genzel**  
NOBEL PRIZE LAUREATE  
Max Planck Institute for Extraterrestrial Physics, Garching

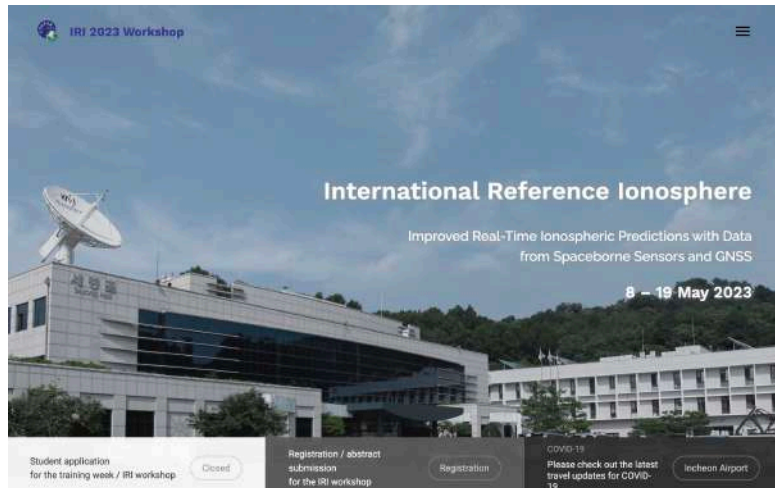
### A 40-YEAR JOURNEY

Date: 14 February 2023  
Time: 14:00 - 15:00  
Venue: NWU Potchefstroom Campus, Building E5, Room G04 or connect via Zoom  
Speaker will connect virtually.

More than one hundred years ago, Albert Einstein published his Theory of General Relativity (GR). One year later, Karl Schwarzschild found the first exact solution to GR, describing the spacetime around a spherical mass. This solution, known as the Schwarzschild solution, is the basis of our understanding of black holes. In 1963, Reinhard Genzel, now at the Max Planck Institute for Extraterrestrial Physics, began his journey to discover the nature of the supermassive black hole at the center of our galaxy, Sagittarius A\* (Sgr A\*). His work has been instrumental in the discovery of Sgr A\* and the understanding of its properties. This lecture will explore the journey of discovery from the early days of GR to the present day, highlighting the challenges and triumphs of this work. There will be time for questions and discussion after the lecture. Please contact the organizers for more information.



# May 2023 - IR Ionosphere in South Korea



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# Collaborations with IAU

The International Astronomical Union (IAU) has a new programme IAU - Hands on Workshop (I-HoW), very similar to COSPAR's CB

- 2 Ground-based Astronomy Proposals accepted in first I-HoW call (2022),  
An X-ray space astronomy however proposed further to COSPAR PCB
- >> agreement PCB - I-HoW on 50/50 funding
- >> X-ray astrophysics workshop took place in South Africa in Feb. 2023
- >> Space Astrophysics (JWST) workshop in 2024, Thailand - same model

Model for future space astronomy events!

Next accepted proposal in 2024:

- X-ray astrophysics (XMM, Chandra, Xrism) workshop in China

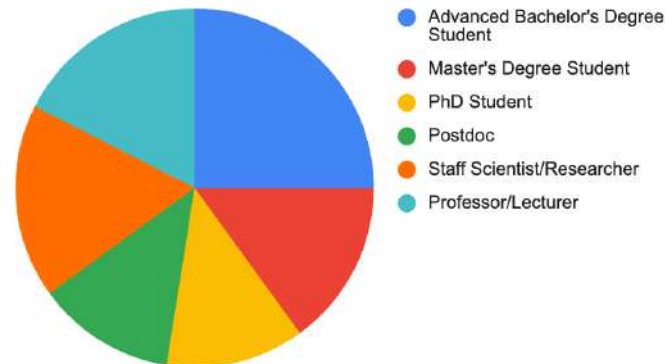
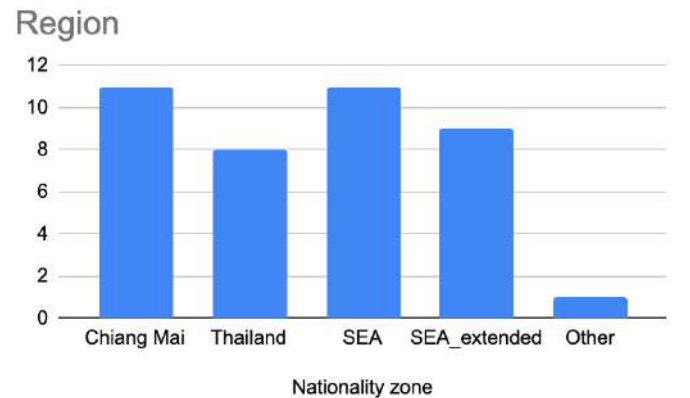
# Last WS - two months ago in Chiang Mai - Thailand



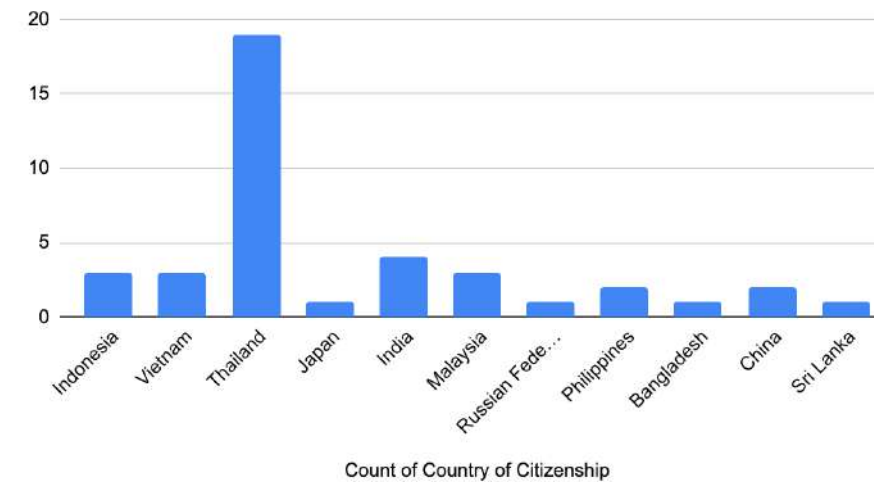
# JWST Data Analysis and Processing COSPAR/IAU workshop

*First WS based on JWST Data (we can expect many more in the future)*

- 128 applications
- 40 selected
- Full lodging + travel subvention for all non locals
- Meals + coffee breaks + excursion for all



Count of Country of Citizenship



Gender distribution (f/m): 19 / 21

# COSPAR/IAU WS on JWST Data Analysis and Processing I

- Thanks to ESA, NASA, JAXA, CAB, NARIT, UNESCO, ITCA
- Excellent team of lecturers/supervisors
- Place excellent - local host fantastic
- First WS of the kind: some difficulties



**JWST Data Analysis and Processing Workshop (South East Asia)**

**JDAP 2024**

Chiang Mai, Thailand  
24 June - 5 July, 2024

**SOC:**  
Luis Colina (CAB, Spain) - Scientific Co-Leader  
Carlos Gabriel (COSPAR PCB, Germany)  
Nicha Leethochawalit (NARIT, Thailand) - Scientific Co-Leader  
Mariano Mendez (University of Groningen, the Netherlands)  
Themiyi Nanayakkara (Swinburne, Australia)  
Collette Salyk (Vassar, USA)  
Samaporn Tinyanont (NARIT, Thailand)  
Eva Villaver (IAC, Spain)

**LOC:**  
Nicha Leethochawalit (NARIT)  
Samaporn Tinyanont (NARIT)  
Krittapas Chanchaiworawit (NARIT)  
Kanthanakorn Nongnang (NARIT)  
Utane Sawangwit (NARIT)  
Matipon Tangmabtham (NARIT)  
Supaluck Chanthawan (NARIT)  
Natthida Yarangari (NARIT)  
Supachai Awiphan (NARIT)

**APPLY NOW!**

**Application Deadline: 15 February 2024**  
**Result Announcement: 15 March 2024**  
<https://indico.narit.or.th/e/JDAP2024>  
Email: [jdap2024@narit.or.th](mailto:jdap2024@narit.or.th)

**NO REGISTRATION FEE!**

Background: Multi-band image from M81 (<https://webbtelescope.org/>)



**JWST Data Analysis and Processing Workshop (South East Asia)**

24 June 2024 to 5 July 2024  
Chiang Mai, Thailand  
Announcement: 15 March 2024

**Get Hyped!**

**Overview**  
Important Dates  
Application Form  
Schedule  
Speaker List  
Travel Information  
Sponsors  
Contact  
[jdap2024@narit.or.th](mailto:jdap2024@narit.or.th)

**Sponsors**  
This workshop is co-sponsored by the Committee on Space Research (COSPAR), the International Astronomical Union (IAU), the National Astronomical Research Institute of Thailand (NARIT), the Centre de Astrobiología (CAB), the European Space Agency (ESA), the National Aeronautics and Space Administration (NASA), and the Japan Aerospace Exploration Agency (JAXA).

**SCIENTIFIC LEAD**

**ONLINE**

**Speaker List**

Dr Krittapas Chanchaiworawit (National Astronomical Research Institute of Thailand)

Dr Luis Colina (Centro de Astrobiología, Spain)

Dr Carlos Gabriel (COSPAR)

Dr Nicha Leethochawalit (National Astronomical Research Institute of Thailand)

Dr Javier Alvarez Marquez (Centro de Astrobiología INTA-CSIC, Spain)

Prof Mariano Mendez (University of Groningen, Netherlands)

Dr Themiyi Nanayakkara (Swinburn University of Technology, Australia)

Dr Isabel Rebolledo (Centro de Astrobiología INTA-CSIC, Spain)

Prof Marcia Rieke (University of Arizona, USA)

Dr Samaporn Tinyanont (National Astronomical Research Institute of Thailand)

Prof Michele Trenti (University of Melbourne, Australia)

Prof Eva Villaver (Universidad Autónoma de Madrid, Spain)

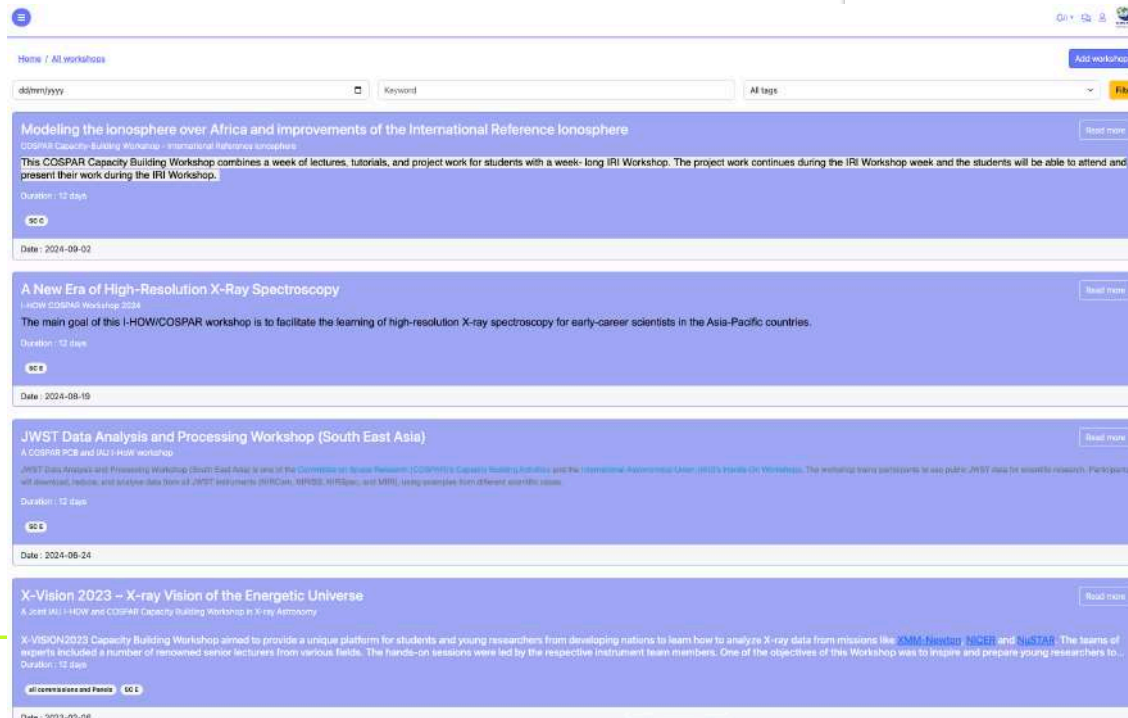
Assoc. Prof Xin Wang (University of Chinese Academy of Sciences, China)

Dr Christopher Willmer (Steward Observatory, USA)

Special guest: Prof. Félix Mirabel (IAFE, Argentina)

# COSPAR/IAU WS on JWST Data Analysis and Processing II

- First direct use of COSPAR Alumni App (AApp) for communication
- Upgrades desired and expected in the short future



- Registering all our Alumni and lecturers
- They can keep updating their data

# COSPAR/IAU WS on JWST Data Analysis and Processing III

Usual Evaluation (answered by > 80%, will complete the report) showing high degree of satisfaction



## Some conclusions:

- Serious difficulties with large volumes of data to be downloaded
- S/W shortcomings proper of a young mission
- “Project” time resulting in most cases too short

# COSPAR WS on Solar Physics - Samarkand, Uzbekistan



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## COSPAR Capacity Building Workshop

"CORONAL AND INTERPLANETARY SHOCKS: ANALYSIS OF SOHO, STEREO, SDO, WIND, AND GROUND-BASED RADIO DATA"

COSPAR Capacity Building Workshop

**Coronal and Interplanetary Shocks:  
Analysis of SOHO, STEREO, SDO,  
Wind, and Ground-based Radio  
Data**

**August 19 - 30, 2024**

Samarkand State University,  
Samarkand, Uzbekistan

**Lecturers:**

Nat Gopalswamy (NASA, USA)  
Christian Monstein (Switzerland)  
Seiji Yashiro (CUA, USA)  
Pertti Makela (CUA, USA)  
Nandita Srivastava (USO/PRL, India)  
Kathiravan Chidambaram (IIA, India)  
Wageesh Mishra (IIA, India)  
Javier Bussons Gordo (UAH, Spain)

**Organizing Committee:**

Nat Gopalswamy (NASA, USA)  
Christian Monstein (Switzerland)  
Nandita Srivastava (USO/PRL, India)  
Hakim Hushvaktov (SamSU, Uzbekistan)  
Akhnad Absanov (SamSU, Uzbekistan)  
Rashid Eshburiev (SamSU, Uzbekistan)  
Zavkiddin Mirtoshev (SamSU, Uzbekistan)



<https://cospar2024samarkand.samdu.uz/>

# COSPAR/IAU WS on High Resolution X-ray spectroscopy



# COSPAR WS on International Reference Ionosphere



IRI 2024  
Workshop

Training  
Week

Student  
Application

Registration /Abstract  
Submission

Workshop  
Program

Transportation /  
Accommodation

Committee

## COSPAR Capacity-Building Workshop - International Reference Ionosphere

Modeling the ionosphere over Africa and improvements of the International Reference Ionosphere

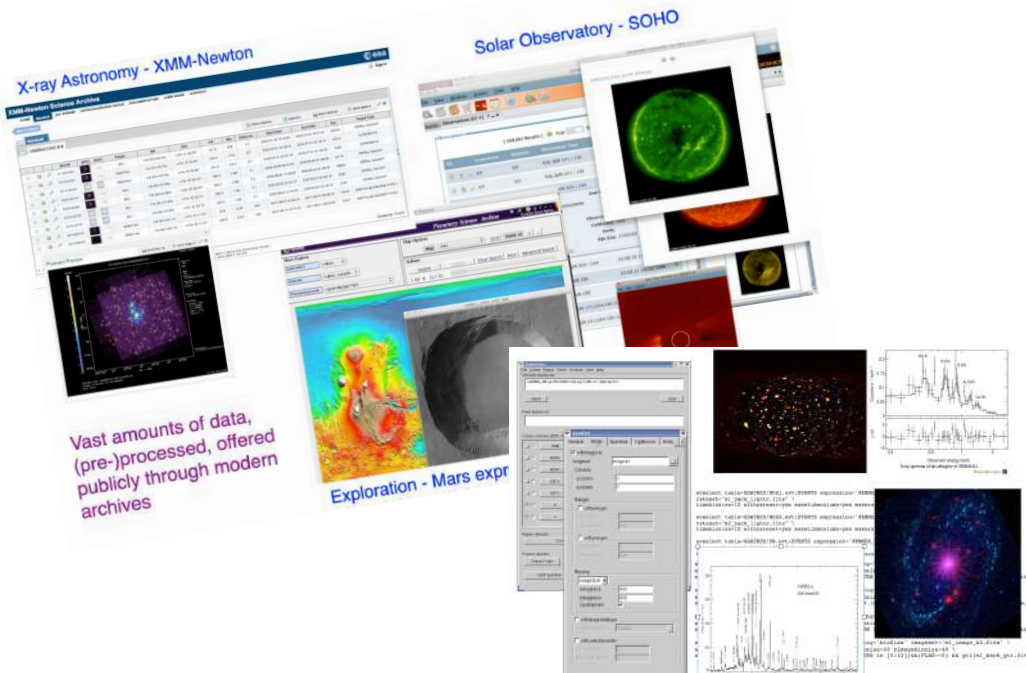
From 2nd – 13th September 2024

Pwani University, Kilifi, Kenya

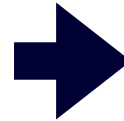
COSPAR Capacity-Building Workshop  
2 - 13 September

IRI 2024 Workshop  
9 -13 September

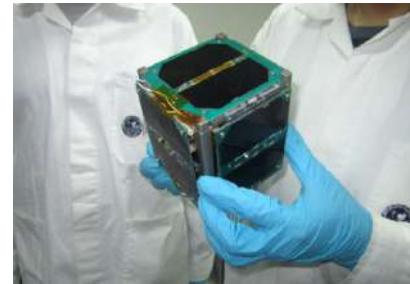
# Fostering science excellence in developing countries



encouraging **scientists** in developing countries to use **scientific data** from **space missions**



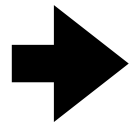
+



involving **students** in small-satellite **design, building, testing, and operations** + helping build-up of related **university labs**

# COSPAR CB with INSPIRE - How?

- CB at project team level instead of individual researchers - (5-6 students + 1 supervisor per selected unit)
- Large involvement of universities in developing countries
- Labs development in those universities - long-term commitment
- Collaboration with SS running projects in one or several areas - long-term
- CB across campuses and nations

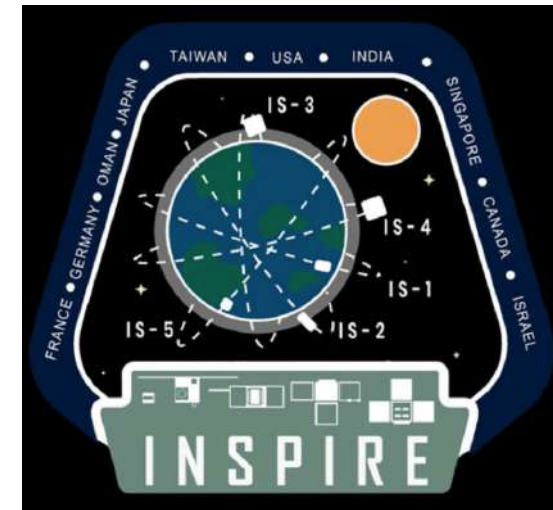


- Partnership with INSPIRE



# INSPIRE

## International Satellite Program in Research and Education Constellation of Satellites



Opportunity for undergraduate and graduate student involvement in small-satellite design, building, testing, and operations

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# COSPAR CB with Small Sats - first experience

- Peruvian team of 5 advanced engineering students selected with some experience in the field to participate in INSPIRE Summer School 2024 (May 28 to August 10)
- Development of 2 small sats:
  - COSPAR-1: Space weather mission - 3U cubesat carrying a LASP solar spectral sensor, a French Lab LATMOC Radiation sensor and Taiwan NCU LEO radiation dosimeter payloads.

Planned to be environmentally tested and ground station end-to-end test completed in the summer.

- COSPAR-2: CIS-lunar 6U mission to fly with lunar lander company *ispace* in 2026. At design and engineering prototype stage.

Planned to do pre-PDR instrument integration (for Space Weather measurements around the Moon) with the spacecraft avionics.

# First report on activities



## Summer School on Small Satellites COSPAR-LASP

Laboratory for Atmospheric and Space Physics (LASP), CU Boulder, CO, USA

07/04/2024

Members of the SATELLITE SYSTEMS UNI – PERU team from the National University of Engineering (UNI), Lima, Peru:

1. Salvador Eduardo Romero de la Roca
2. Roberto Carlos Future Mendieta
3. Martin Jesus Rospigliosi Levano
4. Raul Martin Figueroa Teran
5. Gabriel Ulises Flores Castañeda

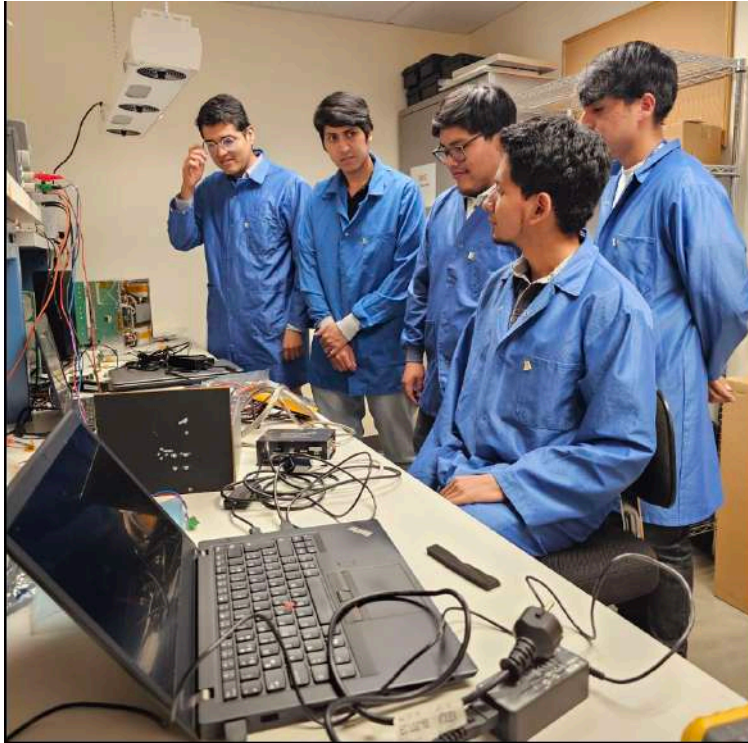


Table 1. Members developing each subsystem of the COSPAR-I mission.

PM	SE	ME	EE	FSW	Thermal	ADCS	Comms	Ground Systems
Vanessa	Dylan	Vanessa	Shatha	Taleb	Vanessa	Shatha	Gabriel	Gabriel
Shatha	Roberto	Phoebe	Roberto	Shatha	Phoebe	Morgan	Halal	Halal
Raul	Tzu-Wei	Martin	Halal	Mohammed	Robert	Halal	Taleb	Taleb
Brandi	Binson	Robert	Kennedy	Roberto	Raul	Binson	Mohammed	Mohammed
Binson	Salvador	Raul	Morgan	Kennedy	Martin	Roberto	Brandi	Brandi
			Tzu-Wei	Vanessa		Dylan	Robert	Shatha
			Raul	YiHsuan		YiHsuan	Phoebe	Salvador
			Gabriel	Gabriel				Binson
			Salvador					YiHsuan
								Tzu-Wei

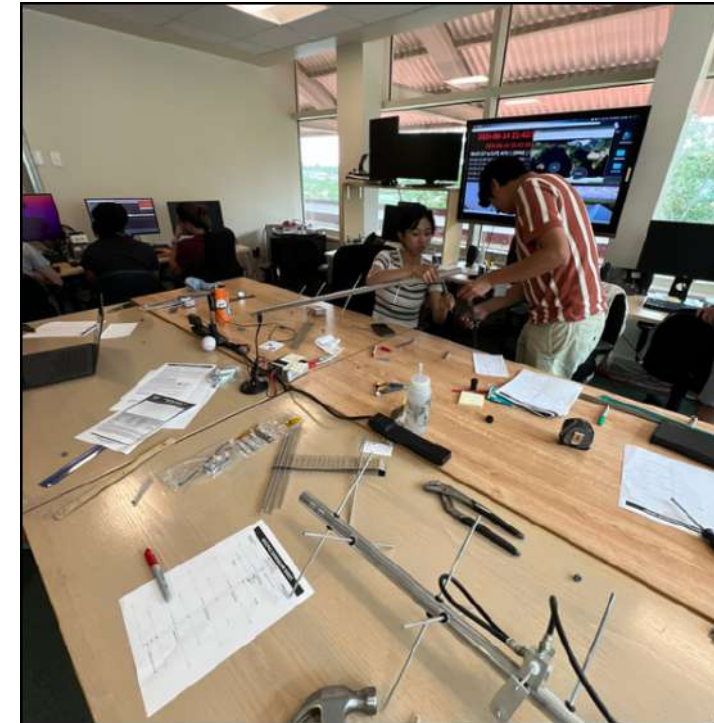
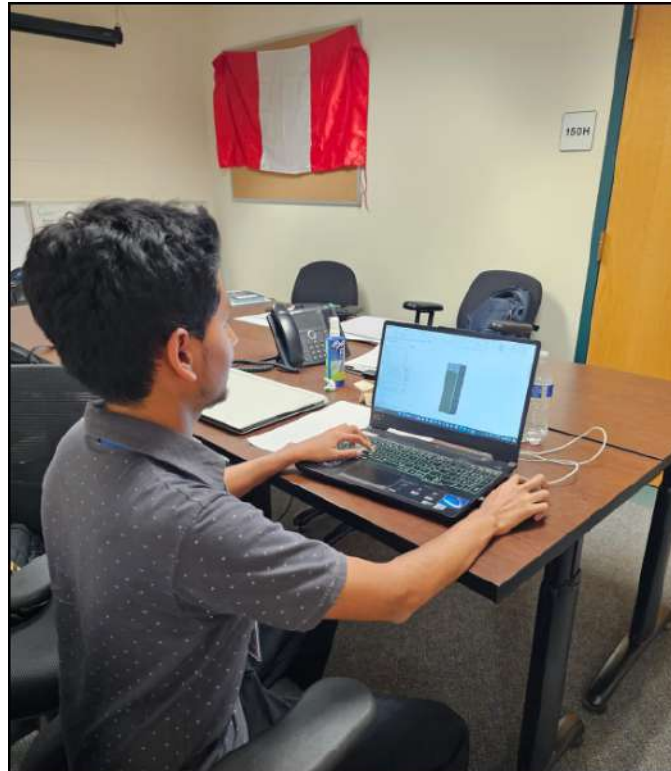
1. **Salvador Eduardo Romero de la Roca:**
  - *Systems Engineering, Electrical Engineering, and Ground Systems.*
2. **Roberto Carlos Future Mendieta:**
  - *Systems Engineering, Electrical Engineering, Flight Software, and Attitude Determination and Control System.*
3. **Martin Jesus Rospigliosi Levano:**
  - *Mechanical Engineering, Thermal.*
4. **Raul Martin Figueroa Teran:**
  - *Project Management, Mechanical Engineering, Electrical Engineering, and Thermal.*
5. **Gabriel Ulises Flores Castañeda:**
  - *Electrical Engineering, Flight Software, Communications, and Ground Systems.*

## In the lab at LASP



Peruvian team working in the LASP Center for Astrophysics and Space Astronomy (CASA) / Astrophysics Research Lab (ARL).

- working on the mechanical design of the COSPAR-1 mission using SolidWorks

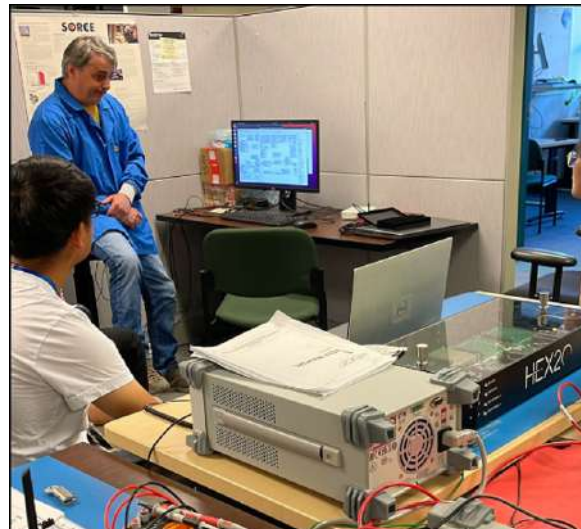


- building a Yagi antenna for FLATSAT HEX20 communication tests for the COSPAR-1 mission

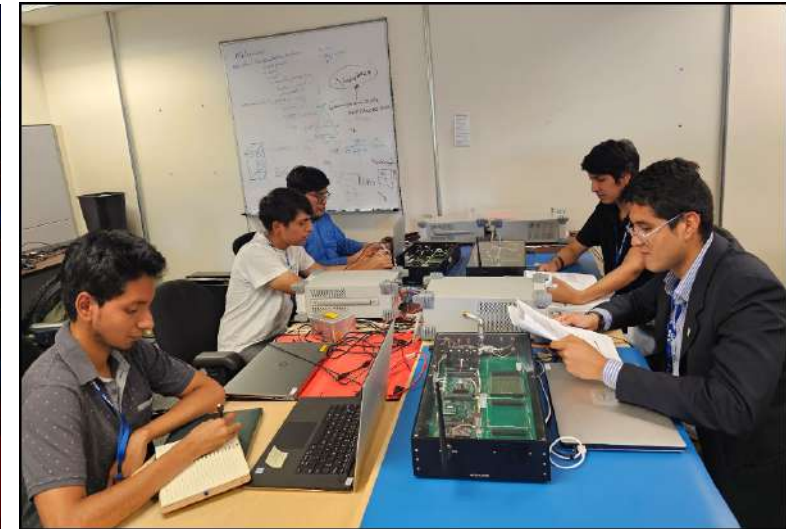
# Validating software, performing tests



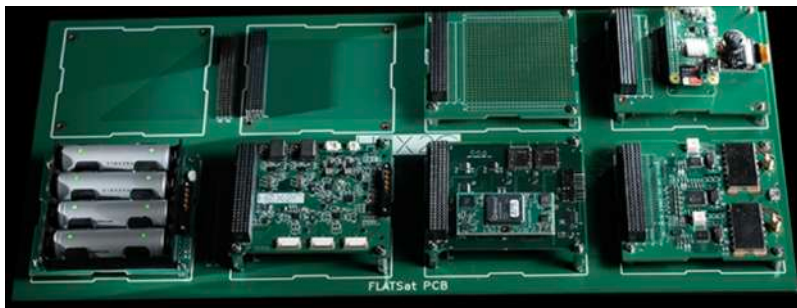
Validating software for FLATSAT HEX20



Performing communication tests



Validating software and performing communication tests for FLATSAT HEX20 for the COSPAR-1 mission



FLATSAT HEX20 lab testbed provided by COSPAR will be used to develop COSPAR-1 and COSPAR-2 and will be shipped to Peru after the summer school as part of the expansion of the local small satellites lab at UNI

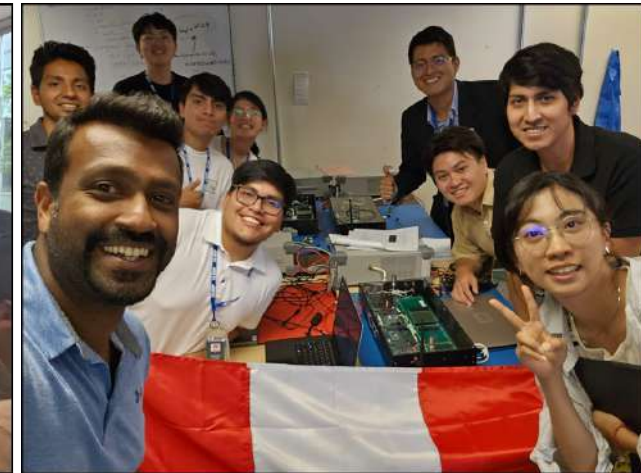
# Learning by doing, communicating, collaborating



General presentation of the development of the COSPAR-1 mission during June



Peruvian team members presenting the development of the COSPAR-1 mission



With National Central University (NCU) team from Taiwan in the FLATSAT HEX20 test lab

Communication with UNI authorities: full support to this initiative and providing support of local lab expansion for many years. Budget already in place.

# Summary

- After 24 years of BC, the initiative is healthier than ever
- 2024: The largest number of workshops within a year in our history
- First JWST data workshop held
- Combination of online components
- Collaborations with other CB organisations
- App for Alumni programme - good first results
- Launch of new programme based on small satellites



# Questions? Comments?



# Some COSPAR CB questions

# An app for Alumni communication



<https://workspace.cospar.world/wp-login.php>

Each workshop its own area

Committee on Space Research

Username or Email Address


Password

☐ Remember Me

Log In

Lost your password?

Go to Workspace




**COSPAR**  
COMMITTEE ON  
SPACE RESEARCH

Welcome to COSPAR Workspace

the COSPAR app for Capacity Building Workshops

This application is designed for COSPAR Capacity Building Workshop participants and lecturers.


There are 4 sections in this application



Workshops

This is where you can consult/manage your workshops


Go to the workshop Section



Chat

Chat with other alumni and lecturers


Chat with someone



Tags

Find more information/Add a tag to your favorites

Choose your tags



Questions

This is where you can ask and reply to questions

Ask something

Home / All workshops

Add workshop

dd/mm/yyyy

Keyword

All tags

Filter

Modeling the ionosphere over Africa and improvements of the International Reference Ionosphere

Read more

COSPAR Capacity-Building Workshop - International Reference Ionosphere

This COSPAR Capacity Building Workshop combines a week of lectures, tutorials, and project work for students with a week-long IRI Workshop. The project work continues during the IRI Workshop week and the students will be able to attend and present their work during the IRI Workshop.

Duration : 12 days

SCG

Date : 2024-09-02

A New Era of High-Resolution X-Ray Spectroscopy

Read more

I-HOW COSPAR Workshop 2024

The main goal of this I-HOW/COSPAR workshop is to facilitate the learning of high-resolution X-ray spectroscopy for early-career scientists in the Asia-Pacific countries.

Duration : 12 days

SCG

Date : 2024-08-19

JWST Data Analysis and Processing Workshop (South East Asia)

Read more

A COSPAR PCB and IAU I-HoW workshop

JWST Data Analysis and Processing Workshop (South East Asia) is one of the Committee on Space Research (COSPAR)'s Capacity Building Activities and the International Astronomical Union (IAU)'s Hands-On Workshops. The workshop trains participants to use public JWST data for scientific research. Participants will download, reduce, and analyse data from all JWST instruments (NIRCam, NIRISS, NIRSpec, and MIRI), using examples from different scientific cases.

Duration : 12 days

SCG

Some local CB questions

# Registration



[Home](#) / [Users](#) Add user

Filter

Total users : 36

Total administrators : 2

Total organizers : 13

Total lecturers : 7

Total alumnis : 14

**Alexi Glover**  
alexi.glover@esa.int

View profile

**Antonio Geraldo Ferreira**  
antonio.ferreira@ufc.br

View profile

**Camila**  
camila.cavledes.22@alunos.udac.cl

View profile

**Carlos**  
juan.carlos.gabriel@gmail.com

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**JWST Data Analysis and Processing Workshop (South East Asia)** Visit website

A COSPAR PCB and IAU I-HoW workshop

JWST Data Analysis and Processing Workshop (South East Asia) is one of the [Committee on Space Research \(COSPAR\)](#)'s Capacity Building Activities and the [International Astronomical Union \(IAU\)](#)'s [Hands-On Workshops](#). The workshop trains participants to use public JWST data for scientific research. Participants will download, reduce, and analyse data from all JWST instruments (NIRCam, NIRISS, NIRSpec, and MIRI), using examples from different scientific cases.

Duration : 12 days

sc e

Date : 2024-06-24

this workshop was created by: Carlos

Participants

Add a participant

Add

#	Name	Role	Action
1	carlos	Organiser	<div>remove participant</div> <div>remove participant</div>

You have to be registered  
by an authorised account  
*(You will use an open  
laptop to register yourself,  
1 by 1)*

[Home](#) / [Users](#)

**New User**

Username (required)

Email (required)

Password (required)

Als3m0rRRf5\$

Role

Alumni

Add User

# I was in a COSPAR CB Workshop

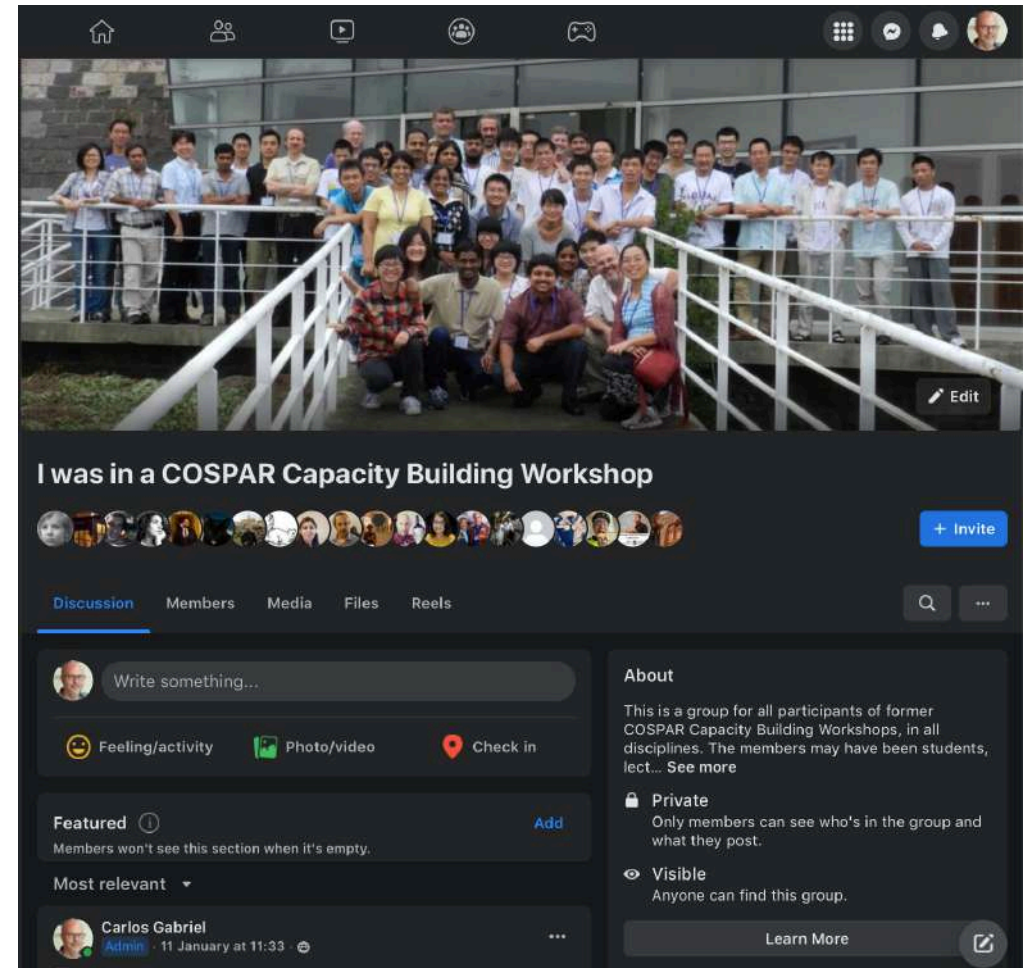


A way to communicate with former participants of a CB WS, get / exchange information, etc

Enroll

Facebook group: “I was in a COSPAR Capacity Building Workshop”

<https://www.facebook.com/groups/519695544831814>



1. Please choose one or two participants of this workshop, who are going to be your representatives, for the Alumni programme:
  - A. Ideally they should volunteer... but if not...
  - B. Main job is to keep the link to all participants in the future (WhatsApp / Facebook / whatever)
  - C. Help in a year or two from now to organize a Zoom session

# COSPAR CB Fellowship



Remember there is a fellowship for  
former participants of a CB WS...  
...it can be a great opportunity

The screenshot shows the COSPAR website's navigation bar with links: ABOUT US, LATEST NEWS, STRUCTURE, EVENTS, PUBLICATIONS, AWARDS, SUPPORTERS, YOUNG SCIENTISTS, and LAUNCH LIST. Below the navigation bar is a breadcrumb trail: HOMEPAGE > SCIENTIFIC STRUCTURE > PANELS > PANEL ON CAPACITY BUILDING (PCB) >. The main heading is 'THE COSPAR CAPACITY BUILDING FELLOWSHIP PROGRAM AND ALUMNI', with a subtext 'Last update Thursday, September 29th, 2022'. The title 'The COSPAR Capacity Building Fellowship Program and Alumni' is followed by an update notice: 'UPDATE: deadline for applications extended to 14 October 2022.' and an important note: 'IMPORTANT: This program is only for young scientists who have participated at one of the COSPAR Capacity-Building Workshops.' To the right is a list of links: Goals, The Proposed Research Program, Conditions of the Fellowship, Applications, Contacts for collaborating institutions, Criteria for Selection, and Useful links. Below this, under the heading 'Goals:', the text states: 'The PCB Fellowship program is open to young scientists who have been participants at one of the COSPAR Capacity-Building Workshops'.

Details: <https://cosparhq.cnes.fr/scientific-structure/panels/panel-on-capacity-building-pcb/the-cospar-capacity-building-fellowship-program-and-alumni/>

Find link: <https://cosparhq.cnes.fr/events/cospar-capacity-building-workshops/>

# Your evaluation



You can help us to improve (is that possible??!! yes, sure)

Evaluation Chiang Mai All changes saved in Drive [Send](#)

[Questions](#) [Responses](#) [Settings](#)

## Evaluation

**B** *I* U

COSPAR/IAU CB WS on JWST Data Analysis and Processing Workshop (South East Asia)

**Email \***

Valid email

This form is collecting emails. [Change settings](#)

**Your name** (It is not essential that you give your name, but we may understand your comments better)

Short answer text

General - The website told me all I needed to know about the workshop

1. Strongly agree

**Lectures**

☐ The science lectures were for me personally the most useful part of the workshop

☐ The software lectures were for me personally the most useful part of the workshop

☐ The projects were for me personally the most useful part of the workshop

**Science lectures - Time**

☐ The time spent on the lectures was too long

☐ The time spent on the lectures was too short

☐ The time spent on the lectures was just right

**Science lectures - Level**

☐ The lectures were at too high a level

Some local CB questions

# Your duties



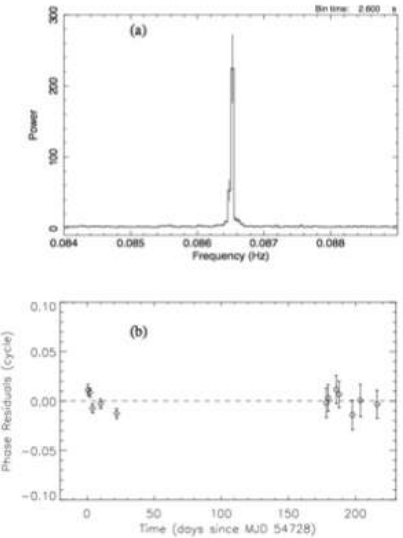
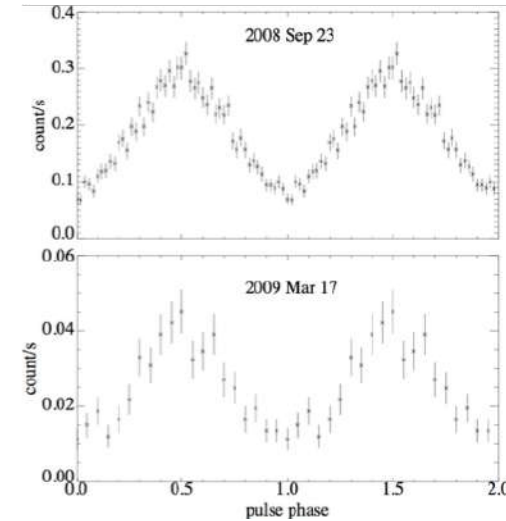
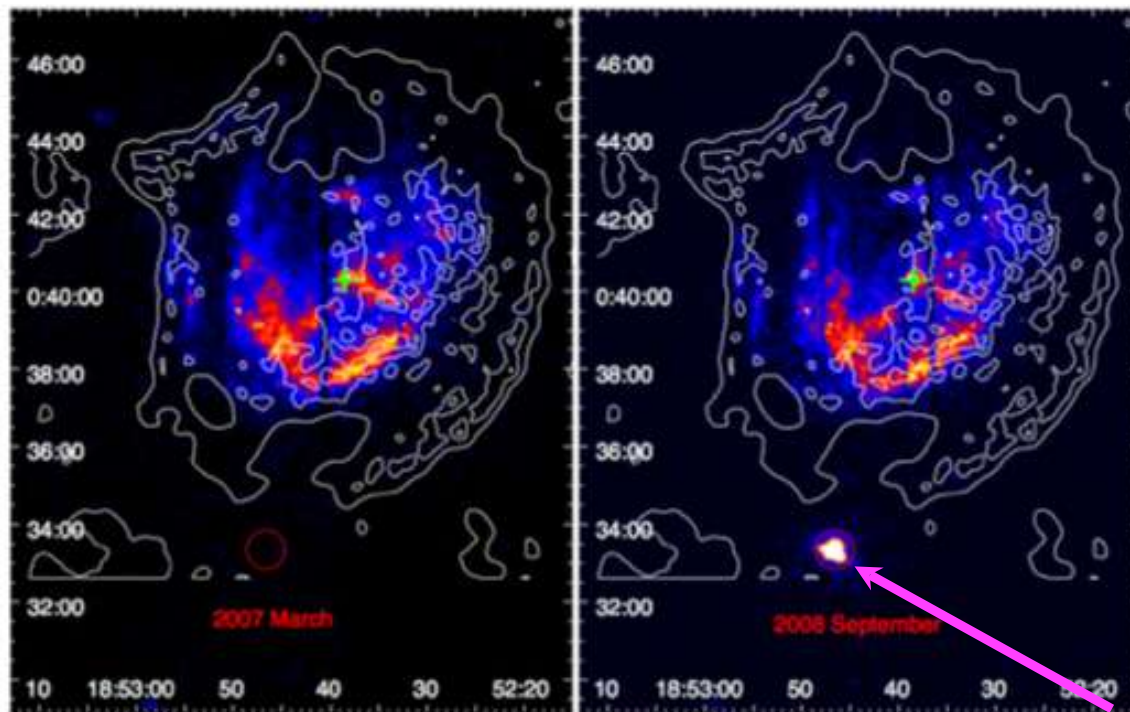
- Register in the COSPAR App (after the presentation)
- Volunteer to become / choose a WS representative
- Become a member of the FB group “I was in a COSPAR CB WS”
- Fill in your comments in the Evaluation Google Form
- Think about applying for a COSPAR Fellowship
- Be (reasonably) happy



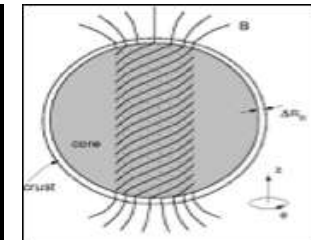
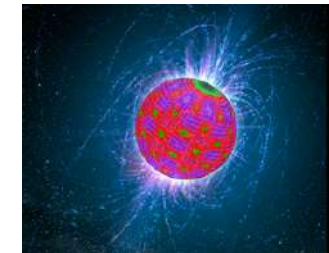
# A bonus track?

# Bonus track: a COSPAR CB WS history

X-ray astronomy CB Workshop (Xuyi, China, 9/2013)  
The student Ping Zhou revisited data from the XMM-Newton archive (observations of the SNR - Kes 79)



**Magnetar:** neutron star with an extremely **high magnetic field**  
(unique labs to study physics of ultra-magnetized objects)



3XMM  
J185246.6+003317

The combination of spectral and frequency properties, the non-detection of optical / IR counterparts, nor in X-ray archives:

>> **transient magnetar** with the longest period  $P \sim 12s$   
 >> **nineth** transient magnetar **discovered**, **third** of the low magnetic field class



Wn.com Rare magnetar found near supernova

### Rare magnetar found near supernova remnant

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- Windows Phone
- Romelu Lukaku
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- Lucretia van Gool
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**T**weet Washington, Dec. 12 (ANI): Astronomers have discovered a new transient magnetar near supernova remnant SNR Kesteven 79. It is likely that the magnetar, an ultra-magnetic neutron star, was part of a binary star system together with an anti-magnetar. During a COSPAR training workshop, PhD student Ms. Ping Zhou from the University of Nanjing in China used X-ray images from ESA's X-ray telescope XMM-Newton from 2008 and 2009 to discover a bright source south of the supernova remnant that was not visible in

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### Press Release - Rare Magnetar



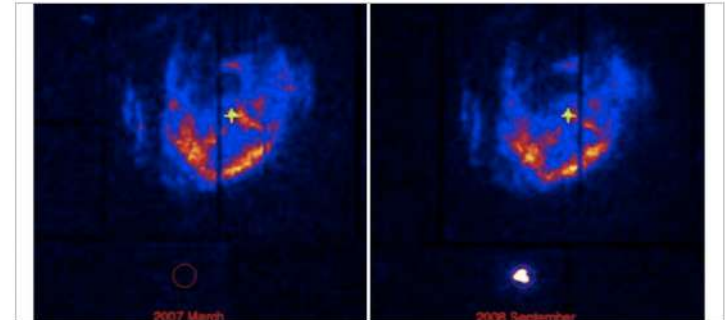
Rare magnetar discovered in the vicinity of a supernova remnant

A team of astronomers led by the PhD student Ms. Ping Zhou from the University in China discovered a new transient magnetar. This magnetar, the ninth of its class identified during a COSPAR Capacity Building Workshop for young researchers in countries.

## Zeldzame magnetar ontdekt nabij supernovarest

woensdag 11 december 2013, 16:00

Print Delen



De supernovarest SNR Kes 79 en de ontdekte magnetar 3XMM J186536.6+003317 in het röntgen in 2007 en 2008. Credit: Zhou et al. 2014

Een team van astronomen onder leiding van de Chinese promovenda Ping Zhou heeft een nieuwe veranderlijke magnetar ontdekt. De ontdekking van deze 9e magnetar in zijn soort is gedaan binnen een COSPAR Capacity Building Workshop voor jonge onderzoekers in ontwikkelingslanden. Mogelijk vormde de magnetar (een ultramagnetische neutronenster) een dubbelster met een anti-magnetar. De resultaten van het onderzoek worden gepubliceerd in het tijdschrift *Astrophysical Journal Letters*.

## Un raro magnetar descubierto en las cercanías de un remanente de supernova



12/12/2013 de NOVA/COSPAR

Un equipo de astrónomos dirigido por la estudiante Ms. Ping Zhou de la Universidad de Nanjing en China descubrió un nuevo magnetar transitorio. Este magnetar, el noveno de su clase, fue identificado durante unos talleres organizados por COSPAR para jóvenes investigadores de países en desarrollo. Es probable que el magnetar, una estrella de neutrones ultramagnética, formara parte de un sistema binario de estrellas junto con un antimagnetar.