PCC/Speaker's Office Report & Update

Marco Ricci

37th JEM-EUSO International Collaboration Meeting
Paris – APC/Olympe de Gouges 2 – 6 June 2025

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in cc ex-officio

Etienne Parizot
Marco Casolino
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Mon. May 26th, 2025 23:54:45

The JEM-EUSO PCC

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JEM-EUSO

The 37th International JEM-EUSO Meeting in Paris, May 31st – June 6th, 2025

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JEM-EUSO

The 37th International JEM-EUSO Meeting in Paris, May 31st – June 6th, 2025

JEM-EUSO

The 36th International JEM-EUSO Meeting in Chicago, December 2024

https://pcc-jemeuso.web.roma2.infn.it/

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Below, you can find the document with JEM-EUSO publication rules:

JEM-EUSO Publication Policy

1. Introduction

This document describes the guidelines governing publication and communication of scientific and technical results from JEM-EUSO Program. It applies to publications and communications based either wholly or in part upon data taken by the JEM-EUSO instruments or upon techniques developed in the framework of the JEM-EUSO community, and which were not in the public domain at the time that the scientific investigation was initiated.

Under Review

PCC-Revisions_papers_2024-25

Fichier Édition Affichage Insertion Format Données Outils Extensions Aide

Partager | Connexion

Menus | 75% | Lecture seule

A1 | MISSION

Mini-EUSO	Refined STACK-CNN for Meteor and Space Debris Detection in Highly Variable Backgrounds	L. Olivi	Remote Sensing		and to PCC Submitted to Journal 20 April PUBLISHED vol. 17 p. 10432 (2024) DOI: 10.1109/JSTARS.2024.3397734	Journal reviewers asked for major revision
Mini-EUSO	Observation of meteors from space with the Mini-EUSO detector on board the International Space Station	D. Barghini	Astron. & Astroph.	LEVEL-2 Mini-EUSO	1st submission 15 January 2024 - 2nd submission, after review, 11 April Accepted for publication (14 May) PUBLISHED in A&A, 687, A304 (2024)	Journal reviewer and editor asked for some changes to the 1st version
Mini-EUSO	An end-to-end calibration of the Mini-EUSO detector in space	M. Battisti	Astrop. Phys.	LEVEL-2 Mini-EUSO	Sent to Mini-EUSO list (deadline 28 April 2024) and to PCC int. reviewers: R. Caruso and E. Kutznetsov Resp. PCC M. Ricci Updated version sent to PCC and int. reviewers on 5 July 2024 Circulated by A. Haungs/PCC to JEM-EUSO Collab. for 48h check: ended --> submitted 13 July under review by Journal Reply to the reviewer - in progress 5 Sep Deadline for 2nd re-submission 15 Sep PUBLISHED Astrop. Phys Volume 165, February 2025, 103057	First draft sent 17 April 2024 Reviewd by EK 8 May Manuscript Number: ASTROPARTPHYS-D-24-00114

Under Revision

Wed. Jun 4th, 2025 12:59:28

The JEM-EUSO PCC

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Conferences

The 39th International Cosmic Ray Conference (ICRC 2025) in Geneva, Switzerland, July 15-24, 2025

The JEM-EUSO PCC

See also next talk by Zbigniew:

New webpages and JEM-EUSO official database

CURRENT STATUS OF PAPERS/PUBLICATIONS

PROGRESS AND UPDATE 2025

Most of papers in preparation have been extensively mentioned – and described – in the presentations during this week

EUSO-SPB2 Publications (taken from Lawrence's presentation)

SPB2 – related journal papers **Published**

"Neutrino propagation in the Earth and emerging charged leptons with nuPyProp", Diksha Garg et al., Journal of Cosmology and Astroparticle physics, Volume 2023, January 2023, 041 arXiv:2209.15581

Ultra-High-Energy Cosmic Rays: The Intersection of the Cosmic and Energy Frontiers, A. Coleman et al, Astroparticle Physics Volume 149, July 2023, 102819 arXiv:2205.05845:

"Characterization and absolute calibration of R11265 multi-anode photomultiplier tubes for the JEM-EUSO space and balloon program, I: Methods and generic features", **E. Parizot** et al, Astroparticle Physics, 171 Sept 2025, 103112.

SPB2 – specific journal papers **Published**

"*The Camera and Readout for the Trinity Demonstrator and the EUSO-SPB2 Cherenkov Telescope*, M Bagheri et al. NIST A, 12 Jun 2024. NIST A 1070, Jan 2025 169999 arXiv:2406.08274

The EUSO-SPB2 Fluorescence Telescope for the Detection of Ultra-High Energy Cosmic Rays, J.H. Adams et al (EUSO-SPB2 group), Astroparticle Physics 165 Feb 2025 103046) arXiv:2406.13673

"*Characterization and absolute calibration of R11265 multi-anode photomultiplier tubes for the JEM-EUSO space and balloon program, I Application to the EUSO-SPB2 Photo Detection Modules,* ***D. Trofimov*** *et al., Astroparticle Physics (in press)*

SPB2 – specific journal papers **Submitted**

"The Extreme Universe Observatory on a Super-Pressure Balloon II: Mission, Payload, and Flight", J.H. Adams et al. (EUSO-SPB2 group), Submitted 5/28/2025, Journal of Cosmology and Astroparticle Physics (JCAP), arXiv: 2505.20762

SPB2 –publications - in preparation

Observation of Cosmic Rays above the limb via Cherenkov Telescope on-board the EUSO-SPB2 mission

EUSO-SPB2 Cherenkov Telescope results for target of opportunity neutrino sources

EUSO-SPB2 Diffuse Neutrino Limit and Night Sky Backgrounds

SPB2 related short author papers in preparation

Scheduling follow-up observations of energetic transients with the neutrino target scheduler (NuTS)

Geomagnetic Field Deflections and Cherenkov Production of Muons in Horizontal Extensive Air Showers (D. Fuehne, T. Heibge)

ICRC 2025 Presentations/Proceedings in preparation (3)
EUSO-SPB2 Cherenkov Telescope: Overview and First Neutrino Constraints Heibges (Reno et al)
Using the Cherenkov Telescope onboard EUSO-SPB2 for Target of Opportunity searches of very high energy neutrino sources Venters, Guépin at al
EUSO-SPB2 Cosmic Ray Searches and Observations Filippatos

The two papers on MAPMTs characterization prepared and managed by Etienne and Daniil

Characterization and absolute calibration of multi-anode photomultiplier tubes (MAPMTs) for the JEM-EUSO space and balloon program: I. Methods and generic features

E. Parizot[a,b], D. Trofimov[a,c,d], S. Blin[a,g], A. Creusot[a], D. Allard[a], P. Barrillon[e], M. Battisti[a,f], A.A. Belov[c,d], C. Blaksley[a], P. Gorodetzky[a], P.A. Klimov[c], E. Msihid[a], L. Piotrowski[h], G. Prévôt[a], J. Szabelski[i], C. de la Taille[g]

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Abstract

Over the last decade, the Joint Exploratory Missions for an Extreme Universe Space Observatory (JEM-EUSO) collaboration has developed several balloon and space missions implementing different versions of a dedicated camera based on multi-anode photomultiplier tubes (MAPMTs) used in single photoelectron counting mode, in the near ultraviolet. In this paper, we present the experimental techniques developed to calibrate these MAPMTs and determine their main characteristics, relevant to the JEM-EUSO applications. Our results include the absolute calibration of the MAPMTs in both full illumination and localized illumination modes, the measurement of the so-called s-curves and their fitting with a newly developed fitting formula, the study of cross-talk and residual non-poissonian behaviour, the determination of the physical size of the individual pixels, the wavelength dependence of the photodetection efficiency, the characterization of the pile-up effect and the determination of the corresponding double pulse resolution using a dedicated readout implementing the SPACIROC-3 Application-specific integrated circuit. These techniques allowed us to identify generic features of the MAPMTs of type R11265 from Hamamatsu, including the occasional occurrence of multiple counting of single photons, which the Hamamatsu company was then able to correct and eliminate. We find that the reliability, high-efficiency and homogeneity of these MAPMTs is well suited for the multi-disciplinary scientific objectives of the JEM-EUSO collaboration. The application of our techniques to the characterization and absolute calibration of the fluorescence camera of the EUSO-SPB2 mission is presented in an accompanying paper.

Keywords: MAPMT calibration, UHECR, JEM-EUSO, Fluorescence Telescope

Characterization and absolute calibration of multi-anode photomultiplier tubes (MAPMTs) for the JEM-EUSO space and balloon program: II. Application to the EUSO-SPB2 photodetection modules

D. Trofimov[a,b,c], E. Parizot[a,d], P.A. Klimov[b], A.A. Belov[b,c], A. Creusot[a], D. Allard[a], M. Battisti[a,e], S. Blin[a], M. Casolino[f,g], T. Ebisuzaki[g], G. Filippatos[h,i], E. Msihid[a], A. Murashov[b], A.V. Olinto[i], G. Osteria[j], G. Prévôt[a], J. Szabelski[k], Y. Takizawa[g], L. Wiencke[h]

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[m] *Stefan Batory Academy of Applied Sciences, Skierniewice, Poland*

Abstract

The fluorescence camera of the EUSO-SPB2 mission is the last and most advanced implementation of the technology developed within the JEM-EUSO (Joint Exploratory Missions for an Extreme Universe Space Observatory) collaboration to study ultra-high-energy cosmic rays (UHECRs), extensive atmospheric showers and transient luminous events from space. It consists of three photodection modules, each hosting nine elementary cells and 36 multi-anode photomultiplier tubes (MAPMTs), for a total of 6912 pixels. The associated electronics allows to operate in single photon counting mode. In this paper, we apply the calibration techniques presented in the accompanying paper (Paper I) to characterize the photodetectors of the EUSO-SPB2 fluorescence camera. In particular, we determine the photodetection efficiency and physical size of each pixel. We find an average efficiency of ~32%. We also examine its dependence with high voltage and photon wavelength, and determine the double pulse resolution of the different channels, of the order of 10 ns.

Keywords:

Astroparticle Physics

Volume 171, September 2025, 103112

Characterization and absolute calibration of R11265 multi-anode photomultiplier tubes for the JEM-EUSO space and balloon program, I: Methods and generic features

E. Parizot [a b], D. Trofimov [a c d], S. Blin [a g], A. Creusot [a], D. Allard [a], B. Baret [a], P. Barrillon [e], M. Battisti [a f], A.A. Belov [c d], C. Blaksley [a], P. Gorodetzky [a], P.A. Klimov [c], E. Msihid [a], L. Piotrowski [h], G. Prévôt [a], J. Szabelski [i], C. de la Taille [g]

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Abstract

Over the last decade, the Joint Exploratory Missions for an Extreme Universe Space Observatory (JEM-EUSO) collaboration has developed several balloon and space missions implementing different versions of a dedicated camera based on multi-anode photomultiplier tubes (MAPMTs) used in single photoelectron counting mode, in the near ultra-violet. In this paper, we present the experimental techniques developed to calibrate these MAPMTs and determine their main characteristics,

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Available online 29 May 2025, 103131

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Characterization and absolute calibration of R11265 multi-anode photomultiplier tubes for the JEM-EUSO space and balloon program: II. Application to the EUSO-SPB2 photodetection modules

D. Trofimov [a b c], E. Parizot [a d], P.A. Klimov [b], A.A. Belov [b c], A. Creusot [a], D. Allard [a], B. Baret [a], M. Battisti [a e], S. Blin [a f], M. Casolino [g h], T. Ebisuzaki [h], G. Filippatos [i j], E. Msihid [a], A. Murashov [b], A.V. Olinto [j], G. Osteria [k], G. Prévôt [a], J. Szabelski [l], Y. Takizawa [h], L. Wiencke [i]

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Abstract

The fluorescence camera of the EUSO-SPB2 mission is the last and most advanced implementation of the technology developed within the JEM-EUSO (Joint Exploratory Missions for an Extreme Universe Space Observatory) collaboration to study ultra-high-energy cosmic rays (UHECRs), extensive atmospheric showers and transient luminous events from space. It consists of three photodection modules, each hosting nine elementary cells with 36 multi-anode photomultiplier tubes (MAPMTs), for a

Mini-EUSO "ELVES" paper in review phase by Science Advances

High resolution observations from space of three-ringed and multi-ringed ELVES followed by large halos reveal high-energy dynamics in the ionosphere.

Marco Casolino[1,2,3*], Laura Marcelli[1*], Zbigniew Plebaniak[1,2*], Giulia Romoli[1,2,21], Dario Barghini[4,8,10], Matteo Battisti[1], Alexander Belov[5,6], Mario Bertaina[8,10], Francesca Bisconti[1], Carl Blaksley[3], Sylvie Blin-Bondil[7], Francesca Capel[9], Igor Churilo[11], Antonio Giulio Coretti[8,10], Marino Crisconio[12], Christophe De La Taille[13], Toshikazu Ebisuzaki[3], Francesco Fenu[12], Massimo Alberto Franceschi[14], Christer Fuglesang[15], Daniele Gardiol[4], Alessio Golzio[8,10,16], Philippe Gorodetzky[7], Fumiyoshi Kajino[17], Hiroshi Kasuga[3], Pavel Klimov[6], Vladimir Kuznetsov[11], Massimiliano Manfrin[8,10], Alessandro Marcelli[2], Włodzimierz Marszał[18], Gabriele Mascetti[12], Marco Mignone[10], Hiroko Miyamoto[8,10], Alexey Murashov[6], Tommaso Napolitano[14], Hitoshi Ohmori[3], Etienne Parizot[7], Piergiorgio Picozza[1,2], Lech Wiktor Piotrowski[19], Guillaume Prévôt[7], Enzo Reali[1,2], Marco Ricci[14], Sergei Sharakin[6], Kenji Shinozaki[18], Jacek Szabelski[20], Yoshiyuki Takizawa[3], Giovanni Valentini[12], Michal Vrábel[18], Mikhail Zotov[6]

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Total Number of Manuscripts: 1

Manuscript Number	Role	Journal	Article Type	Title	First Author Name	Status	Last Activity Date	Assigned To
ady4408	Author	Science Advances	Research Article	High resolution observations from space of multi-ringed ELVES followed by large halos reveal high-energy dynamics in the ionosphere	Casolino, Marco	To Review	05-Jun-2025	Editor

National Aeronautics and Space Administration

NASA

INTERNATIONAL SPACE STATION

ANNUAL HIGHLIGHTS of RESULTS 2024

BENEFITS FOR HUMANITY

The Roscosmos-ASI-ESA investigation **Multiwavelength Imaging New Instrument for the Extreme Universe Space Observatory (Mini-EUSO)** is a state-of-the-art multipurpose telescope designed to examine terrestrial, atmospheric, and cosmic ultraviolet emissions entering Earth's atmosphere. Its optical system of 36 multianode photomultiplier tubes capable of detecting single photons allows exceptional imaging during day/night and night/day transitions (Figure 15). Mini-EUSO has been onboard station since August 2019 and is the first mission of a larger program (JEM-EUSO) that includes about 300 scientists from 16 countries.

Figure 15. Digitized image of space debris around Earth. *Image adopted from Mini-EUSO research team video.*

Data from Mini-EUSO has recently been used to test a new machine learning algorithm to detect space debris and meteors when space objects move across the field of view of the telescope. The study, published in the *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, reports that the highly sensitive algorithm, called **Refined Stacking Method and Convolutional Neural Network (R-Stack-CNN)**, is an improved version of a previous machine learning method expected to become more significant and useful as increasing traffic of satellites and spacecraft sharing the same orbits add to the risk of collisions.[14] Millions of unidentified pieces of space debris could be removed from their orbit once detected.

The R-Stack-CNN model showed precision of 88.2%, a 2% improvement over the standard method used before, and detected 63.4% more events. Researchers improved the detection of space debris and meteors by using many instances of simulated and real data, enabling offline detection, and including light curves that provide information about the rotation rates of the objects and their physical characteristics. These upgrades allowed researchers to reduce false positives and increase the reliability of the algorithm.

Despite the challenges of detecting opaque objects with a moving telescope, a changing background of clouds, light emissions from cities, Moon reflections, and the small fraction of optimal conditions during twilight, researchers employed an advanced neural network used in computer vision that allowed them to classify information more accurately.

The R-Stack-CNN algorithm could be implemented on ground-based telescopes or satellites to identify space debris, meteors, or asteroids and increase the safety of space activities.

PBR papers in progress

PBR/1

Prepared for submission to JCAP

POEMMA-Balloon with Radio: A multi-messenger, multi-detector balloon payload

JEM-EUSO collaboration
PBR Authors

One University,
some-street, Country

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Abstract. The Probe Of Extreme Multi-Messenger Astrophysics (POEMMA) is a proposed dual-satellite mission with the goal of observing Ultra-High-Energy Cosmic Rays (UHECRs) to increase the statistics at the highest energies, and Very-High-Energy Neutrinos (VHENs) following multi-messenger alerts of astrophysical transient events, such as gamma-ray bursts and gravitational wave events, throughout the universe. POEMMA-Balloon with radio (PBR) is a small-scale version of the POEMMA design, adapted to be flown as a payload on one of NASA's suborbital Super Pressure Balloons (SPBs) circling over the Southern Ocean for up to 100 days after a launch from Wanaka, New Zealand. The main science objectives of PBR are: (1) to observe UHECRs via the fluorescence technique from suborbital space; (2) to make the first observations of horizontal high-altitude air showers (HAHAs) with energies above the cosmic ray knee (E¿3PeV) using both fluorescence and radio detection; and (3) to track astrophysical event alerts in the search of associated VHENs. We will discuss these science goals in detail and describe the PBR instrument design to achieve these goals.

ArXiv ePrint: xxxx.xxxx

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PBR/1.1

Contents

PBR/2

Prospects for Observing KM3NeT/ARCA-like Events from Astrophysical Transients with PBR

Angela V. Olinto,[1] Luis A. Anchordoqui,[2] Austin Cummings,[3] Johannes Eser,[1] Diksha Garg,[4] Claire Guepin,[5] Tobias Heibges,[6] John F. Krizmanic,[7] Thomas C. Paul,[1] Karem Peñaló Castillo,[2] Mary Hall Reno,[4] and Tonia M. Venters[7]

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(Dated: February 2025)

POEMMA-Balloon with Radio (PBR) is a scaled-down version of the Probe Of Extreme Multi-Messenger Astrophysics (POEMMA) design, optimized to be flown as a payload on one of NASA's sub-orbital super pressure balloons circling over the southern oceans for a mission duration of as long as 50 days. One of the main science objectives of PBR is to follow up astrophysical event alerts in search for neutrinos of very high energy ($10^8 \lesssim E_\nu/\mathrm{GeV} \lesssim 10^{10}$). Of particular interest for anticipated PBR observations, the KM3NeT Collaboration has recently reported the detection of the neutrino KM3-230213A with $10^{8.1} \lesssim E_\nu/\mathrm{GeV} \lesssim 10^{8.9}$. Such an unprecedented event is in tension with 90% CL upper limits on the cosmic neutrino flux from IceCube and the Pierre Auger Observatory, unless it was produced by a transient activity in its source. We calculate the PBR horizon-range sensitivity to expose a population of similar bursting sources in the Universe. We also consider the possibility that the KM3NeT/ARCA event was produced by the decay of superheavy dark matter broadly distributed in the Galactic halo.

I. INTRODUCTION

On February 13, 2023, a partial implementation of the KM3NeT/ARCA detector [1, 2] recorded an energetic, nearly horizontal muon track—with a reconstructed energy of $E_\mu = 120^{+110}_{-60}$ PeV [3]. This event, designated as KM3-230213A, represents the highest-energy neutrino event observed to date; further details are provided in Sec. II. The absence of a similar event in the IceCube [4] or Auger [5] data samples excludes its association with the diffuse cosmogenic neutrino flux. Moreover, the lack of corroborating evidence for a steady source origin [6, 7] strongly suggests that transient sources are the only viable explanation. Among these, Blazars were examined as a potential source category by the KM3NeT collaboration [8] with inconclusive results, while a subsequent analysis [9] demonstrated that the combined observations from KM3NeT, IceCube, and Pierre Auger are consistent with a transient source featuring a flare duration of less than two years. To optimally study such transient sources, an instrument is desired that is capable of pointing at any position in the sky, following the source for a sufficient time, and having a low energy threshold.

POEMMA-Balloon with Radio (PBR) is a stratospheric balloon mission representing the most advanced pathfinder for future space-based missions, such as the Probe of Multi-Messenger Astrophysics (POEMMA) [10]. PBR is designed to fulfill these above requirements as one of its three main scientific objectives: the search for transient astrophysical neutrinos via a Target-of-Opportunity (ToO) approach following multi-messenger event alerts. In addition, its scientific program includes the observation of high-altitude horizontal air-showers (HAHAs) and the inaugural measurement of the fluorescence emissions from extensive air showers (EASs) generated by ultra-high-energy cosmic rays (UHECRs) from a suborbital platform.

As a pathfinder, PBR builds on the design studies of POEMMA and leverages experience from previous balloon missions, including EUSO-SPB1 [11] and EUSO-SPB2 [12]. The payload integrates three primary instruments: a Fluorescence Camera (FC), a Cherenkov Camera (CC), and a dedicated Radio Instrument (RI). The FC, which records the longitudinal profiles of UHECR-induced air showers, is described in detail elsewhere [13]. The CC is incorporated into the hybrid focal surface of a 1.1 m Schmidt telescope and provides a field of view (FoV) of 36° (vertical) by 24° (horizontal). Together with the RI, which complements the optical measurements, these instruments form the principal detectors for neutrino signatures such as those associated with event KM3-230213A. A NASA-supplied rotator paired with a custom-designed tilt system facilitates precise positioning of both instruments to any location below the horizon, a critical feature for following up on multi-messenger alerts.

The Cherenkov Camera is designed to capture ultra-fast optical pulses, operating with an integration time of only 10 ns. It uses silicon photomultipliers (SiPMs) with a pixel size of 3 mm×3 mm, yielding an instantaneous FoV of 0.2° per pixel. The 2048-pixel camera, with a detection wavelength range from $[\lambda_{\mathrm{min}}$ to $\lambda_{\mathrm{max}}]$ nm, provides a total FoV of 6° (vertical) by 12° (horizontal). This configuration is sufficiently wide to monitor an astrophysical event for over 20 minutes without active

PBR/3

Structural layout

- TBD: Currently all information is here: https://www.overleaf.com/8812244812gqqqnsnbvpdy#2b7ac9
- Will add a wiki page
- Will have a slack channel
- Currently collecting information and ideas to build a calibration plan
- Any thoughts or ideas are welcome!
- Reaching out to George and Giuseppe to more clearly define what is needed

PBR Instrument Calibration v1.0

June 5, 2025

Contents

Tobias Heibges yesterday's talk: Telescope Calibration

PBR/3.1

Conferences
Workshops
Symposiums
&
Schools

2nd half 2024 - 2025 (as known so far)

Not an exhaustive selection
If you have notice of any event of interest, please inform the PCC

PBR AT CONFERENCES 2024

courtesy of Johannes

Highlights: Conferences

APS	POEMMA-Balloon with Radio:A balloon born Multi-Messenger Multi-Detector Observatory	Johannes
PISA	The Fluorescence Camera of the POEMMA-Balloon with Radio (PBR): Design and Scientific goals CC of PBR & PBR overview	Matteo
ARENA	The Probe of Extreme Multimessenger Astrophysics on a Balloon with Radio	George
CRIS	POEMMA-Balloon with Radio: Mission Overview	Julia
ISVGECRI	POEMMA-Balloon with Radio: a balloon born Multi-Messenger Observatory	Valentina
COSPAR	POEMMA and the road to a multi messenger space observatory	Johannes
TeV PA	POEMMA Balloon with Radio: a multimessenger approach on an ultra-long duration balloon	Beatrice
UHECR	POEMMA-Balloon with Radio, towards a space-based Multi-Messenger Observatory Prospects and interest of observing high-altitude horizontal air showers with suborbital detectors	Johannes George

10 presentation at 8 different, international conferences (1 invited)

Details on wiki, including abstracts and slides/posters
https://gitlab.com/groups/jem-euso/pbr/-/wikis/home/Conferences2024

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7th International Symposium on Ultra High Energy Cosmic Rays (UHECR) 2024

17–21 Nov 2024
Thesaurus Convention and Exhibition Centre
America/Argentina/Buenos_Aires timezone

Enter your search term

Contact
uhecr2024@auger.org.ar

UHECR 2024 - Malargüe, Mendoza, Argentina

Welcome to the 7th International Symposium on Ultra High Energy Cosmic Rays. It will be held in Malargüe, Argentina, site of the Pierre Auger Observatory.

The event is dedicated to the discussions of the latest UHECRs observations, theoretical developments, and future plans in the field.

Topics will include the following subjects:

- Origin of UHECRs
- Acceleration to the highest energies
- Cosmic ray propagation
- Galactic and extragalactic magnetic fields
- Transition from galactic to extragalactic flux
- Hadronic interactions related to extensive air showers interpretation
- Multi-messenger connections of UHECRs, neutrinos, gamma rays and gravitational waves
- Physics beyond the Standard Model

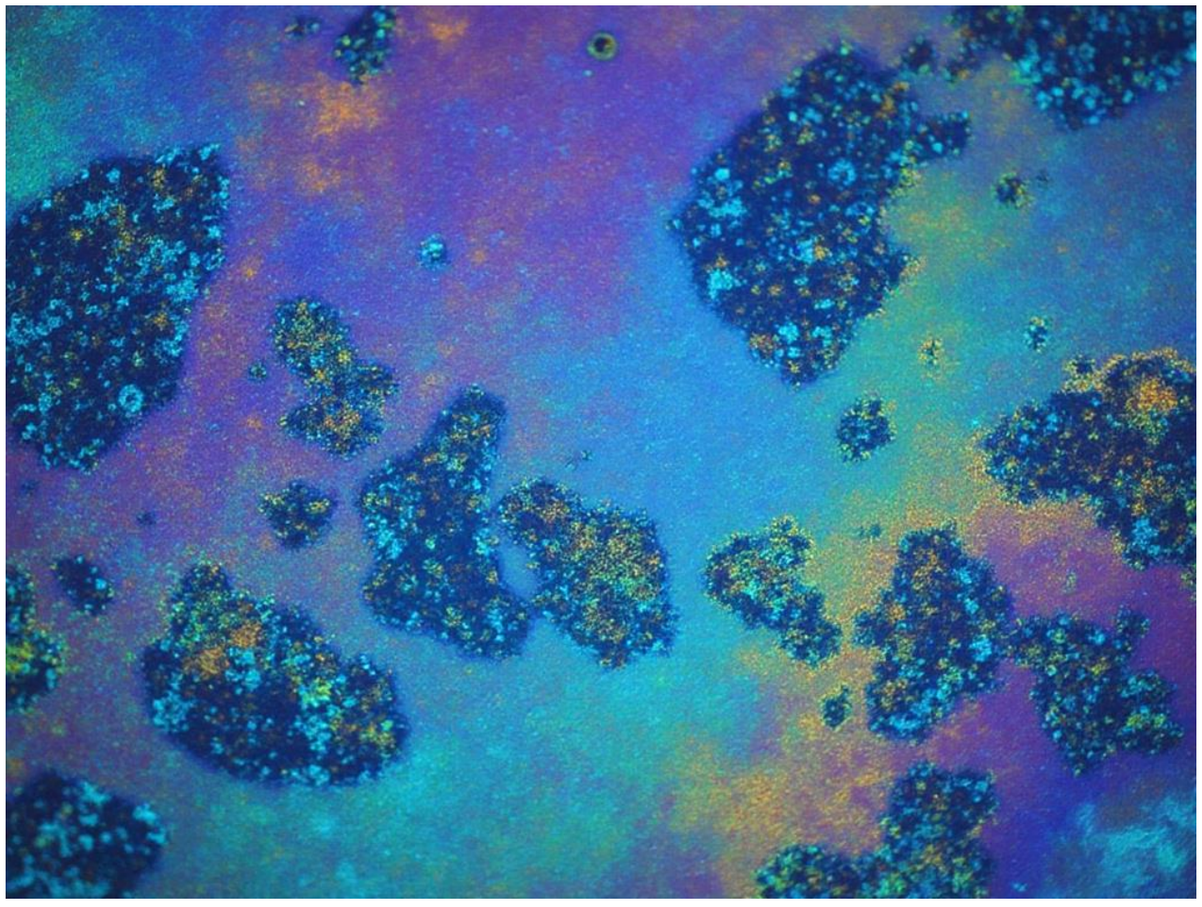
Invited reviews, contributed talks, posters and reports from inter-collaborative working groups will be presented. Proceedings are foreseen.

UHECR 2024

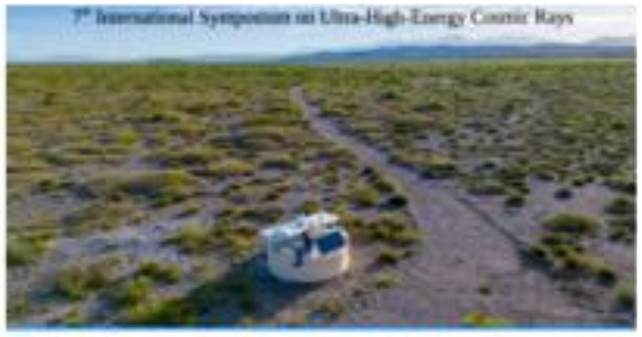
– Malargüe, 17th of November 2024 –

What can be learned about UHECRs from anisotropy observations?

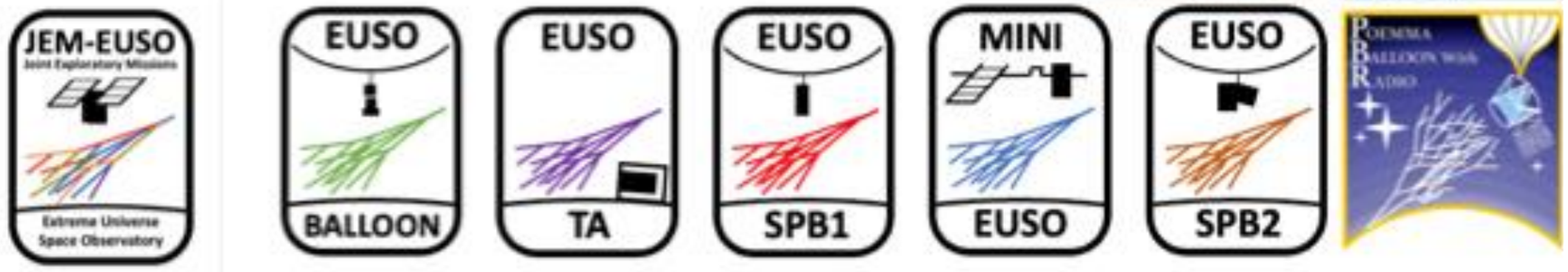
Étienne Parizot, Denis Allard, Julien Aublin and Bruny Baret
(APC, Université de Paris)



Talk at the UHECR 2024
7° International Symposium on Ultra-High-Energy Cosmic Rays
Thursday, November 21st 2024
Malargüe (Mendoza) - Argentina



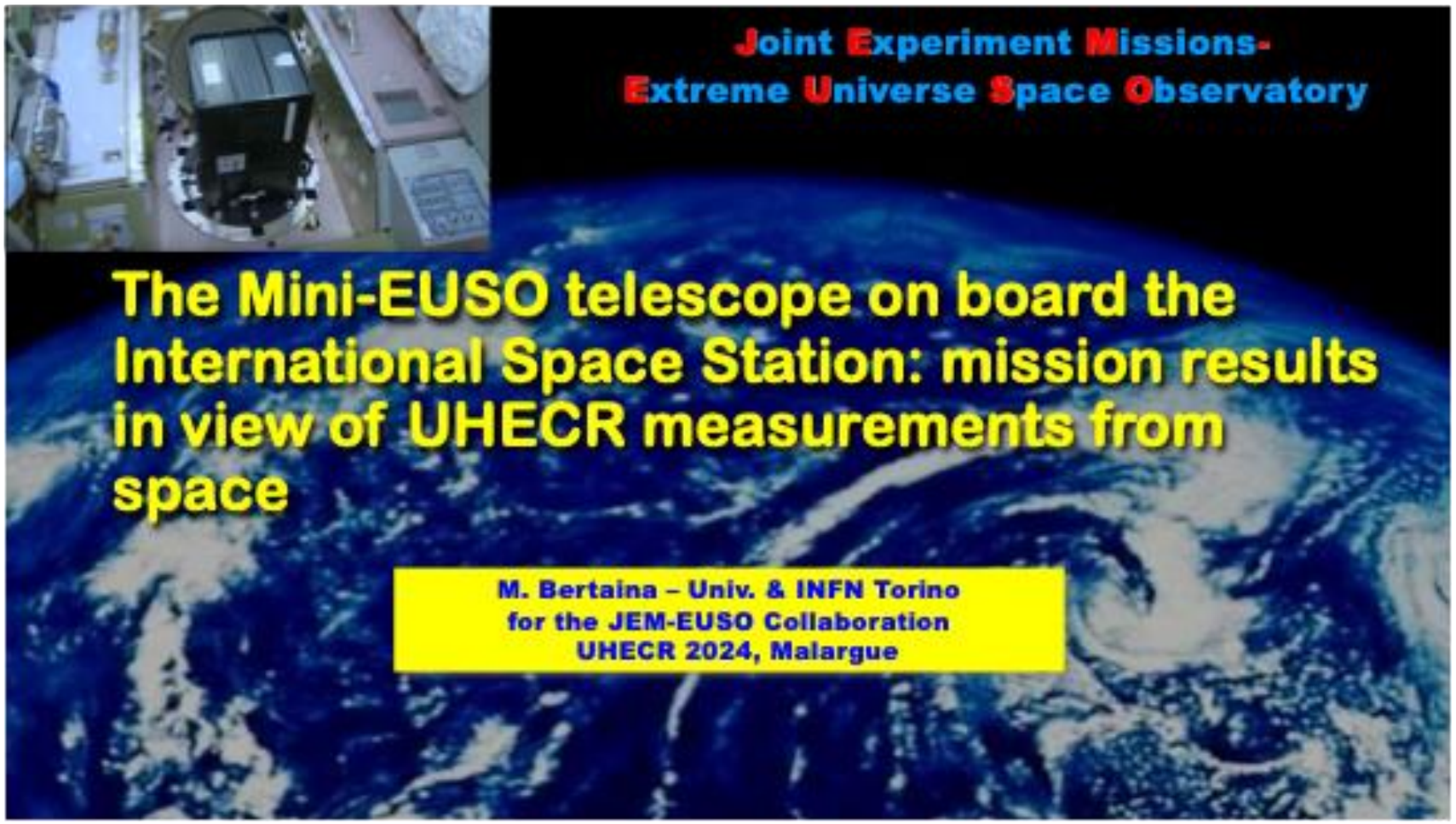
"Overview of the JEM-EUSO Program"



JEM-EUSO: Joint Exploratory Missions towards an Extreme Universe Space Observatory

ROSSELLA CARUSO[1] on behalf of the JEM-EUSO Collaboration
Department of Physics & Astronomy, University of Catania, Italy
& INFN-CT, Catania, Italy

Uni ct FISICA E ASTRONOMIA "ETTORE MAJORANA" INFN CATANIA


Joint Experiment Missions-
Extreme Universe Space Observatory
The Mini-EUSO telescope on board the International Space Station: mission results in view of UHECR measurements from space
M. Bertaina – Univ. & INFN Torino
for the JEM-EUSO Collaboration
UHECR 2024, Malargue

Extreme Universe Space Observatory on a Super Pressure Balloon EUSO-SPB2:

Science, Mission, (some) Results

Lawrence Wiencke
Colorado School of Mines
UHECR 2024 Malargüe, AR
Nov 21st 2024

POEMMA-Balloon with Radio, towards a space-based Multi-Messenger Observatory

J. Eser[1], A. Olinto[2], E. Mayotte[3], G. Osteria[4]
for the JEM-EUSO Collaborations

[1]University of Chicago
[2]Columbia University
[3]Colorado School of Mines
[4]INFN Napoli


Prospects and interest of observing high-altitude horizontal air showers with suborbital detectors
G. Filippatos
7th International Symposium on Ultra High Energy Cosmic Rays
21 November 2024

https://pos.sissa.it/484/

PROCEEDINGS OF SCIENCE

Home what's PoS for organizers for chairpersons for authors for readers staff

UHECR2024

17-21 November 2024
Malargüe, Mendoza, Argentina
published April 29, 2025

Entries on ADS

The 7th International Symposium on Ultra-High-Energy Cosmic Rays (UHECR 2024), held from November 17 to 21, 2024, in Malargüe, Argentina, was a new edition of a series of meetings that bring together the UHECR community and that were previously held in Nagoya (2010), CERN (2012), Springdale, Utah (2014), Kyoto (2016), Paris (2018), and L'Aquila (2022).

The latest results from UHECR observations, theoretical developments, and future plans in the field were discussed. The symposium focused on the highest energy cosmic rays, as well as on cosmic rays with energies above 1 PeV. The agenda included invited reviews, contributed talks, and reports from inter-collaborative working groups, all in plenary sessions. Poster contributions were also presented. Both oral and poster presentations are included in the proceedings.

2025 Scientific Ballooning Technologies Workshop

We are pleased to announce the 2025 Scientific Ballooning Technologies Workshop. The workshop will take place between Wednesday, May 14 and Friday, May 16 in the University of Minnesota Twin Cities campus in Minneapolis.

Registration and abstract submission are now open.

As in the past, workshop topics will include gondola design, experiment-wide data acquisition and control systems, attitude control systems, on-board control software both for the attitude control and for the entire experiment, on-board computer hardware, power systems, telemetry systems, and thermal design and control.

Oral Presentation Program

*2025 BalloonTech Program (FOR WEB)

1							
Wednesday, 5/14/2025, Times are CST			**Topic / Title**				
	Chair: Kierans		**Wednesday Morning 1 - Agency Reviews**		**Presenter**	**Affiliation**	**Abstract**
	0:50	8:00	8:50	Breakfast			
	0:10	8:50	9:00	Opening Remarks	Carolyn, Laura, Valerie		
	0:20	9:00	9:20	NASA Scientific Balloon Program, HQ Perspective	Hams	NASA HQ	
	0:20	9:20	9:40	Updates from the NASA Balloon Program Office	Garde	NASA BPO	Abstract
	0:15	9:40	9:55	NASA's Balloon Working Group	Kogut	NASA GSFC	Abstract
	0:20	9:55	10:15	An update on scientific ballooning activities in Japan	Yoshida	ISAS/JAXA	Abstract
	0:25	10:15	10:40	Break			
	Chair: Garde		**Wednesday Morning 2 - Agency Reviews + Balloon tech**		**Presenter**	**Affiliation**	**Abstract**
	0:20	10:40	11:00	CNES Balloon Roadmap and successful flight for the first Transat Zero Pressure Balloon (CNES, ASC/CSA)	Zenone + Rosenzveig	CNES & CSA	Abstract
	0:20	11:00	11:20	NASA Balloon Program Launch Go/No Go Decision Process	Schwantes	CSBF/Peraton	Abstract
	0:20	11:20	11:40	Low-cost level flight using passive solar hot air balloons	Bowman	PNNL	Abstract
	0:20	11:40	12:00	Hydrogen Inflations	Roth	NASA BPO	Abstract
	1:30	12:00	13:30	Lunch Break			
	Chair: Fissel		**Wednesday afternoon 1 - Balloon tech**		**Presenter**	**Affiliation**	**Abstract**
	0:20	13:30	13:50	Aerial and Surface Mobility at Venus Enabled by Aerobots	Byrne	WashU	Abstract
	0:20	13:50	14:10	Fabrication, Testing, and Flights of Prototype Venus Aerobots	Emanuel + Izraelevitz	JPL	Abstract

Poster Presentation Program

*2025 BalloonTech Program (FOR WEB)

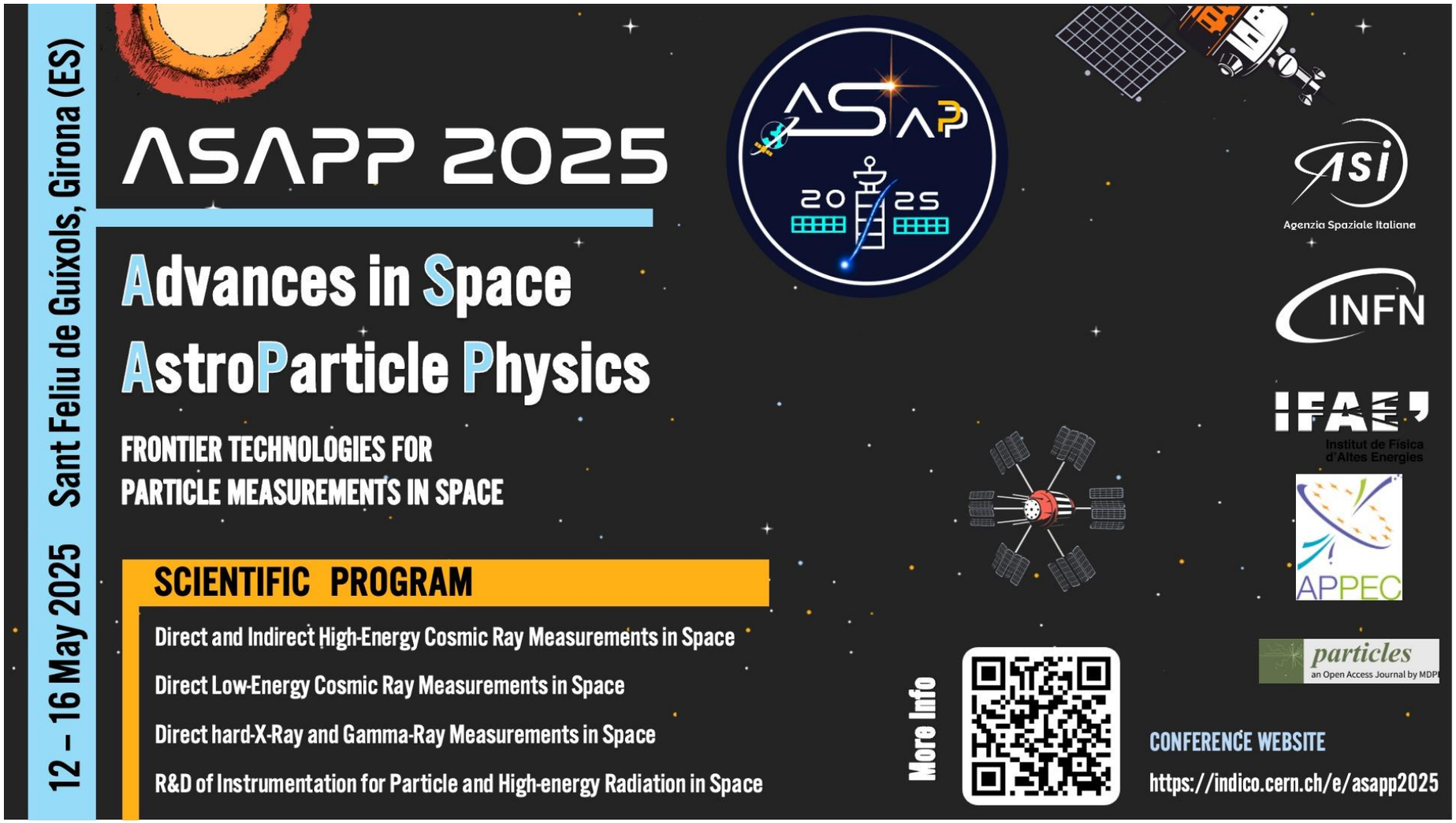
Session	Poster #	Posters			
		Title	Presenter	Affiliation	Abstract
A	1	Cryogenic System Performance and Sun Sensor Development for the EXCITE Mission	Klangboonkrong	Brown University	Abstract
B	2	Mirror Assembly Bonded Joints for the POEMMA Balloon with Radio (PBR) NASA Mission	Wanner	Colorado School of Mines	Abstract
A	3	Tilt Measuring System on NASA POEMMA with Balloon Radio Mission	Bragues	Colorado School of Mines	Abstract
B	4	Design of Azimuthal Rotation system for Field Testing the NASA POEMMA Balloon Radio Payload	Bar-on	Colorado School of Mines	Abstract
A	5	Dark Box and EMI Shield for the POEMMA Balloon with Radio (PBR) Mission	Frederick	Colorado School of Mines	Abstract
B	6	Tools for Sensitivity and Thermal Modeling of Submillimeter Instruments	Nachman	University of Texas at Austin	Abstract
A	7	The Superpressure Cosmic Web Imager	Miles	Caltech	Abstract
B	8	Modeling and Analysis of Planetary Aerobots	Quadrelli/Izraelevitz	JPL	Abstract
A	9	Gas and Aerosol Mass Spectrometer for Venus Balloon	Cutts	JPL	Abstract
B	10	Engineering the Edge: Stratospheric Science and Cosmic Rays	Sabir	Drexel University	Abstract
A	11	Mapping the Regener-Pfotzer Maximum: A Global Collaboration in Cosmic Ray Astrophysics	Ahmari	Drexel University	Abstract
B	12	Operational Improvements to Latex Balloon Deployment and Recovery Systems	Strom	Saint Francis University	Abstract

*Poster Presentation Program

*2025 BalloonTech Program (FOR WEB)

A	13	University of Bridgeport High-Altitude Ballooning Program - Past and Future	Pallis	University of Bridgeport	Abstract
B	14	Achieving Phase Stability on a Balloon Platform with the Balloon-borne Very Long Baseline Interferometry Experiment (BVEX)	Fissel	Queen's University	Abstract
A	15	Trajectory Simulation and Power Optimization for the NASA Super Pressure Balloon	Adams	Colorado School of Mines	Abstract
B	16	New Commercial Heavy Lift Capabilities	Turner	Aerostar	Abstract
A	17	Small Imaging Payloads for Space Situational Awareness	Dobrzanski	York University	Abstract
B	18	EUSO-SPB2 mission: a Starlink experience	Filippatos	University of Chicago	Abstract

F. Cafagna EUSO-SPB2 mission: a Starlink experience. Poster presented by George Filippatos



Proceeding submission deadline: 15 September 2025

ASAPP 2025 – presentations: 2 oral + 7 poster

	A	B	C	D	E	F	G
1	**Author**			**Title**	**Type**		
2							
3	**E. M'sihid**			Correction for pile-up in the photon counting	poster		
4				measurements of the Mini-EUSO experiment			
5				onboard the ISS			
6							
7	**E. M'sihid**			Pile-up studies and statistics: numerical simulations	poster		
8				and experimental results with MAPMTs in single			
9				photoelectron counting mode			
10							
11	**L. Marcelli**			The X-γ detector onboard the POEMMA-Balloon	poster		
12				with Radio payload			
13							
14							
15	**A. Di Salvo**			Preliminary results of the 64-channel MIZAR ASIC for SiPMs readout	poster		
16							
17	**L. Marcelli**			On-board and on-ground operations for the Mini-EUSO telescope on-board the International Space Station	poster		
18							
19							
20	**G. Osteria**			The POEMMA Balloon Radio mission	oral		
21							
22							
23							
24	**B. Panico**			The Cherenkov Camera for the PBR mission	oral		
25							
26							
27	**F. Cafagna**			The Flourescence Camera for the PBR mission	poster		
28							

14–24 Jul 2025
CICG - International Conference Centre - Geneva, Switzerland
Europe/Zurich timezone

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Contact
icrc2025@unige.ch

It is a great pleasure to welcome you to the 39th International Cosmic Ray Conference (ICRC 2025) in Geneva, Switzerland.

The ICRC conferences are held biennially since 1947 by the Commission C4 (Astroparticle Physics) of the International Union of Pure and Applied Physics (IUPAP*). The main topics are Cosmic Ray Physics, High Energy and Gamma-Ray Astrophysics, Neutrino Astrophysics, Dark Matter, Solar and Heliospheric Physics, Multi-messenger and Gravitational Wave Astronomy.

The Local Organizing Committee (LOC), the Scientific Organiszing Committee (SOC), and the International Advisory Committee (IAC) are jointly organizing ICRC 2025.

All the members of the LOC are proud to host ICRC 2025 and welcome you in Geneva to have great and fruitful time during the conference.

URL: http://icrc2025.unige.ch

*Please see here about IUPAP and its conference policies.

Sponsors and Organisations

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CICG

Important dates

November 20, 2024	First circular
December 15, 2024	Opening of registration and abstract submission, second circular
March 14, 2025	Extended abstract submission deadline
Second half of April	Abstract acceptance notification
May 9, 2025	Early registration deadline
May 18, 2025	Release of the conference program
July 5, 2025	Preliminary proceeding submission deadline
July 15-24, 2025	ICRC 2025
September 19, 2025	Final proceeding submission deadline

Proceeding deadlines

	Author		Title	Type	Session
1	**M. Battisti**		Observing ELVES with the Mini-EUSO	poster	Solar & Heliospheric
2			telescope from the International Space Station		
3	**M. Battisti**		Five Years of Mini-EUSO Observations from	oral	Cosmic Ray Indirect
4			the ISS: Summary of Key Results		
5	**M. Battisti**		The X-γ detector onboard the POEMMA-Balloon	poster	Gamma-Ray Astronomy
6			with Radio payload		
7	**M. Bertaina**		Implications of Mini-EUSO measurements for a	oral	Cosmic Ray Indirect
8			space-based observation of UHECRs		
9	**M. Bertaina**		Performance Results of the first version	poster	Cosmic Ray Indirect
10			of the MIZAR ASIC for the PBR mission		
11	**F. Cafagna**		The Fluorescence Camera for the PBR mission	oral	Cosmic Ray Indirect
12	**R. Caruso**		The test and calibration system for the SiPM arrays of the	poster	Cosmic Ray Indirect
13			Cherenkov Camera for the PBR Mission		
14	**J. Eser**		POEMMA-Balloon with Radio: An Overview	oral	Cosmic Ray Indirect
15	**G. Filippatos**		EUSO-SPB2 Cosmic Ray Searches and observations	oral	Cosmic Ray Indirect
16	**C. Guepin**		Using the Cherenkov Telescope onboard EUSO-SPB2	oral	Neutrino Astronomy
17			for Target of Opportunity searches of very high energy		
18			neutrino sources		
19	**E. Mayotte**		The Optical and Mechanical Design of POEMMA Balloon	poster	Cosmic Ray Indirect
20			with Radio		
21	**E. M'sihid**		Statistical analysis and correction of the pile-up	poster	Cosmic Ray Indirect
22			effect in MAPMT single photoelectron counting with		
23			the SPACIROC-3 ASIC: application to the Mini-EUSO		
24			experiment		
25	**A. Olinto**		Prospects for Observing KM3NeT/ARCA-like Events from	oral	Neutrino Astronomy
26			Astrophysical Transients with PBR		
27	**Z. Plebaniak**		From Ground to Space: An Overview of the	oral	Cosmic Ray Indirect
28			JEM-EUSO Program for the Study of UHECRs		
29			and Astrophysical Neutrinos		
30	**Haroon Akhtar Qureshi**		The Data Processor system of the PBR mission	poster	Cosmic Ray Indirect
31	**M.H. Reno**		EUSO-SPB2 Cherenkov Telescope: Overview	oral	Neutrino Astronomy
32			and First Neutrino Constraints		
33	**V. Scotti**		The Cherenkov Camera for the PBR mission	oral	Cosmic Ray Indirect
34	**L. Wiencke**		Telescope Tilt System for the POEMMA Balloon Radio Mission	poster	Neutrino Astronomy

10 oral
8 poster

10 PBR
4 Mini-EUSO
3 EUSO-SPB2
1 GENERAL JEM-EUSO

EUROPEAN PHYSICAL SOCIETY

EPS HEP2025 MARSEILLE

07 11 JULY 2025

EPS-HEP CONFERENCE
07-11 JULY, 2025
PALAIS DU PHARO
MARSEILLE, FRANCE

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WELCOME TO EPS-HEP 2025!

We are thrilled to host the **2025 European Physical Society Conference on High Energy Physics** in the vibrant city of **Marseille**, France. This exciting event will take place at the iconic **Palais du Pharo**, offering a spectacular setting for groundbreaking discussions and discoveries in high energy physics.

Contact

News

Apr 28, 2025
Announcement of the 2025 EPS-HEPP Prizes
We are delighted to announce the winners of the 2025 EPS High Energy and Particle...

Apr 14, 2025
Extended early registration deadline
We're extending the early registration deadline to May 15th (previously April 15th)! Don't miss this...

Apr 3, 2025
First Bulletin of EPS-HEP 2025 Released!
We are pleased to announce the release of the first bulletin for the European Physical...

https://indico.in2p3.fr/event/33627/

Valentina Scotti
The POEMMA-Balloon with Radio Mission: a pathfinder for space-based multimessenger astrophysics

TAUP: Topics in Astroparticle and Underground Physics

Steering Committee

Next edition:

TAUP 2025 - Xichang

Past editions:

TAUP 2023 - Vienna
TAUP 2021 - Valencia
TAUP 2019 - Toyama
TAUP 2017 - Sudbury
TAUP 2015 - Torino
TAUP 2013 - Asilomar
TAUP 2011 - Munich
TAUP 2009 - Rome
TAUP 2007 - Sendai
TAUP 2005 - Zaragoza
TAUP 2003 - Seattle
TAUP 2001 - LNGS
TAUP 1999 - Paris
TAUP 1997 - LNGS
TAUP 1995 - Toledo
TAUP 1993 - LNGS

TAUP 2025 - Xichang

Venue: Qionghai Hotel, Xichang (China)

Dates: 25-29 August, 2025

Organized by: Tsinghua University (China)

The XIX International Conference on Topics in Astroparticle and Underground Physics (TAUP2025)

24–30 Aug 2025
Xichang Qionghai Hotel
Asia/Shanghai timezone

Enter your search term

We are pleased to announce that the XIX International Conference on Topics in Astroparticle and Underground Physics (TAUP2025) will be held at the picturesque Qionghai Hotel, situated along the beautiful lakeshore in Xichang, Sichuan Province, China, from 25 to 29 August 2025. TAUP2025 is designed to convene theorists and experimentalists in the field of astroparticle physics to assess and deliberate on the current state and future directions of our discipline's thematic areas, including cosmology and particle physics, dark matter and its detection, neutrino physics and astrophysics, gravitational waves, high-energy astrophysics, and cosmic rays. Xichang serves as the support city for the China Jinping Underground Laboratory (CJPL), and we are delighted to offer guided visits to the CJPL for our registered participants on August 24 and August 30, 2025.

Conference location: Xichang Qionghai Hotel（西昌邛海宾馆）
Address: 115 Haibin Middle Rd, Xichang, Liang Shan Yi Zu Autonomous, Sichuan Province, China, 615099.

The recommended accommodation can be found in Venue and Accommodation.

Abstract Submission deadline
10 June 2025

https://indico-cdex.ep.tsinghua.edu.cn/event/175/

Workshop for the Global Cosmic Ray Observatory -- Challenging Next-Generation Multi-Messenger Astronomy with Interdisciplinary Research

9–11 Sept 2025
University of Tokyo
Asia/Tokyo timezone

Enter your search term

- Overview
- Call for Abstracts
- Registration
- Participant List
- Venue

Contact
gcos2025@googlegroup…

https://indico.cern.ch/event/1525785/overview

APPEC Town Meeting 2025 - Input for the Strategic Roadmap 2027-2036

23–24 Sept 2025
Centro de Astropartículas y Fisica de Altas Energías (CAPA) of the Universidad de Zaragoza (Spain)
Europe/Zurich timezone

Enter your search term

- Overview
- Timetable
- Contribution List
- Registration
- Participant List
- Venue and travel information

Town Meeting 2025: Preparation of the 2027-2036 Strategic Roadmap

As input for the preparation of the roadmap, a community survey took place beginning of this year. A briefing book including all Astroparticle Physics topics from the survey will be prepared by the APPEC Scientific Advisory Committee and released this summer, stay tuned!

During the APPEC Town Meeting, we will further discuss each of these topics with respect to the European and international context, and the new developments in Astroparticle Physics and in the neighbouring fields that will shape the strategic recommendations of the next roadmap.

https://indico.cern.ch/event/1516919/

Rossella Caruso is co-Director

A. Olinto is in the IAC

Talk by RC at ICRC in the Outreach Session

https://agenda.infn.it/event/44428/

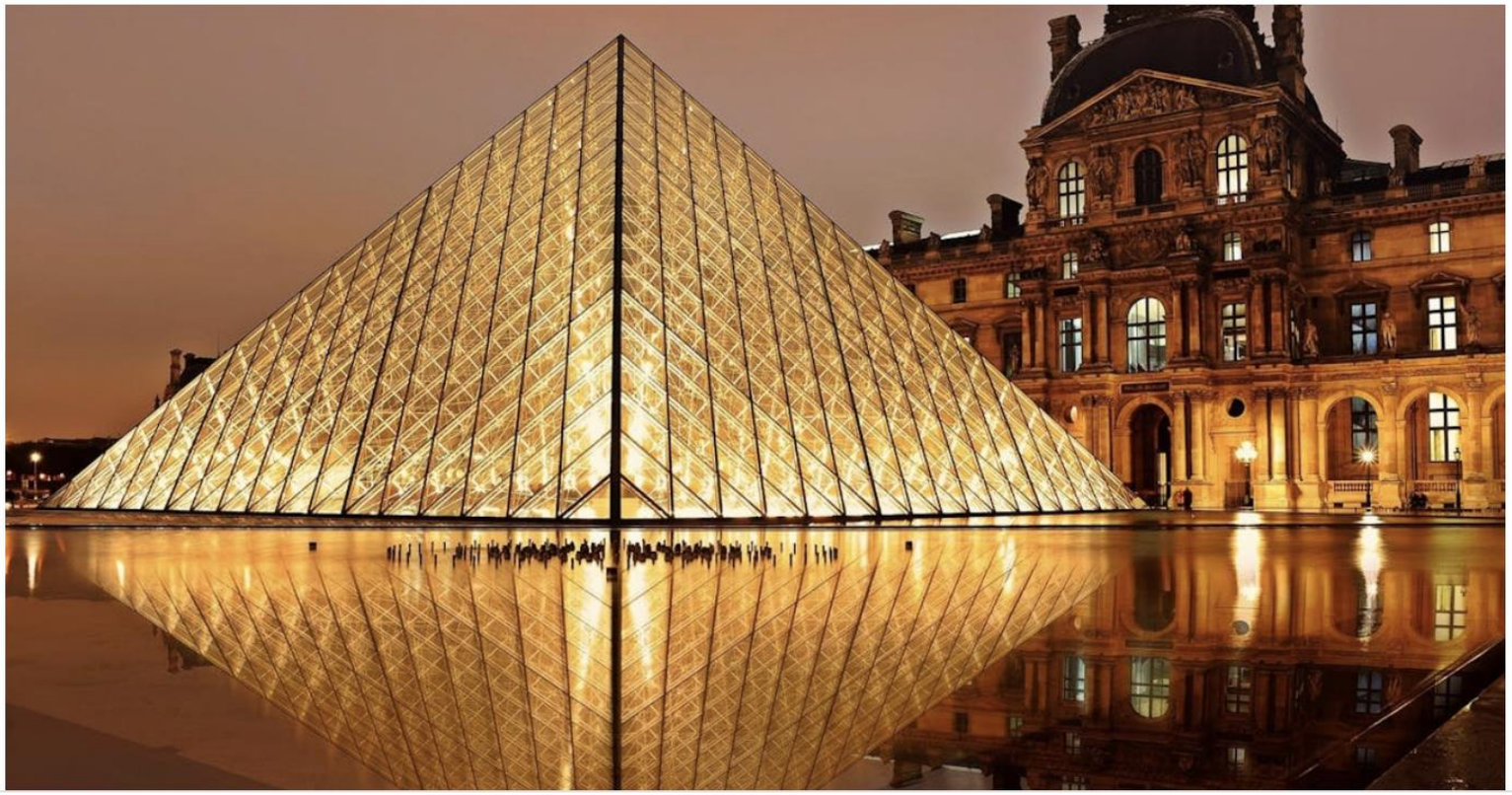
Abstract Submission
No deadline

Next COSPAR Scientific Assembly

Last update Friday, March 28th, 2025

The 46th COSPAR Scientific Assembly will be held in Florence, Italy, 1 – 9 August 2026. The **Call for Abstracts/Announcement** will be posted here in due course and via a link in the August 2025 issue of *Space Research Today*, COSPAR's information bulletin. Much Assembly information, especially concerning the scientific program, will be included in this issue. No second announcement will be published although all information, as well as the updated program, will be posted as it becomes available. The scientific program for the 46th Scientific Assembly will be accessible from mid-August 2025 by clicking the "**46th COSPAR Scientific Assembly**" link. Registration, accommodation, and other logistical information may be found as it becomes available on the **website** of the COSPAR 2026 Local Organizing Committee.

The complete scientific program for the 45th Scientific Assembly, held in Busan, South Korea, 13-21 July 2024, is accessible by clicking the "**45th COSPAR Scientific Assembly**" link. Registration, accommodation, and other logistical information can be found on the **website** of the COSPAR 2024 Local Organizing Committee.



THANK YOU

37th International JEM-EUSO

Collaboration Meeting

***Paris*, APC/Olympe de Gouges**