



IUPAP WG14 on Accelerator Science

Christine Darve

of behalf of the

International Union of Pure and Applied Physics (IUPAP)
WG14 on Accelerator Science

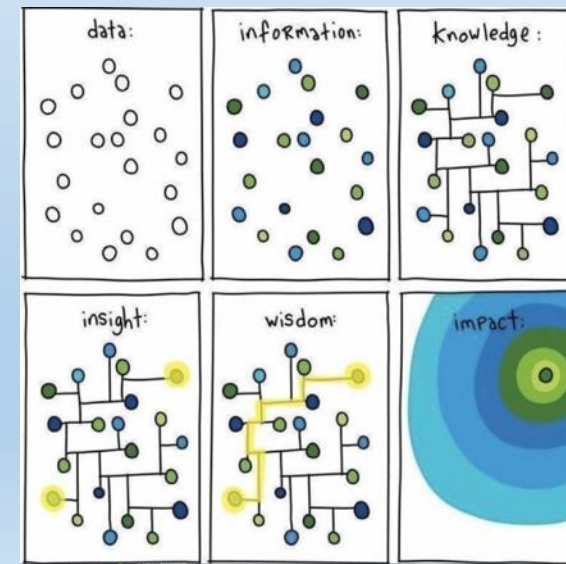
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European Spallation Source, ERIC (ESS)

May 20, 2026

IPAC @ Deauville, FR

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International Union of Pure and Applied Physics 100 IUPAP Centenary YEARS 1922 - 2022

<https://iupap.org/>

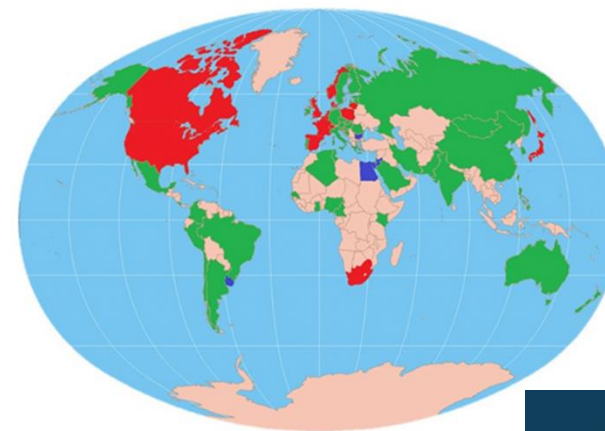
IUPAP is the only global international Scientific Union dedicated to all areas of physics. Created in **1922** with **13 country members**, it now has about **60 territorial members**.

There are no individual members. Since 2021, there are also Corporate Associate Members and since 2023 a new membership category for territories with very small physics communities.

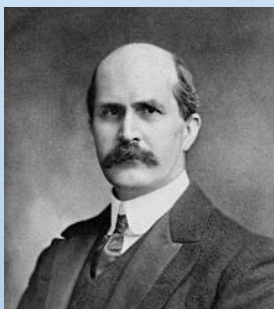
IUPAP is a network of networks, a network of communities

It is organized and run by physicists from all fields and continents

Mission: To assist in the worldwide development of physics, to foster international cooperation in physics, and to help in the application of physics toward solving problems of concern to humanity



● Founding Members
● Current Members
● New Members



W.H. Bragg (1862-1942)



- Sir William Henri Bragg: 1st president of [International Union of Pure and Applied Physics](#) (IUPAP)
- Sir William Lawrence Bragg: 1st president of [International Union of Crystallography](#) (IUCR)

A driver for Peace !

[Introduction Globalizing Physics: One Hundred Years of the International Union of Pure and Applied Physics. An Introductory Essay Roberto Lalli, Jaume Navarro]

IUPAP former structure & Rejuvenization in process !

Affiliated Commissions (independent)

- AC1: Intl Commission for Optics
- AC2: Intl Commission on General Relativity and Gravitation
- AC3: Intl Commission for Acoustics
- AC4: Intl Commission on Med Physics
- AC5: Affiliated Commission of Physics Students (IAPS)
- AC6: Affiliated Commission on the History and Philosophy of Physics

Working Group (& new standing committees)

Temporary structures to address specific issues not covered by commissions

- WG1: Intl Committee for Future Accelerators
- WG5: Women in Physics (established in 1999!)
- WG7: Intl Comm on Ultrahigh Intensity Lasers (ICUIL)
- WG9: Intl Cooperation in Nuclear Physics
- WG11: Gravitational Wave Intl Committee
- WG13: Newtonian Constant of Gravitation
- **WG14: Accelerator Science** ← **Former Chairs 2015-2021 Lia Meringa**
2021-2024: Gianluigi Arduini (CERN)
- WG15: Soft Matter
- WG16: Physics and Industry
- WG17: IUPAP's Centenary
- WG18: Ethics
- WG19: Quantum Science and Technology
- WG20: Open Science (not yet set up)
- WG21: Physics for Climate Change Action and Sustainability

Commissions (mainly organized by subfields)

- C1: Policy & Finance
- C2: Symbols, Units, Nomenclature, Atomic Masses and Fundamental Constants
- C3: Statistical Physics
- C4: Astroparticle Physics
- C5: Low Temperature Physics
- C6: Biological Physics
- C8: Semiconductors
- C9: Magnetism
- C10: Structure and Dyn of Cond Matter
- **C11: Particles and Fields**
- C12: Nuclear Physics
- C13: Physics for Development
- C14: Physics Education
- C15: Atomic, Molecular, and Optical Phys
- C16: Plasma Physics
- C17: Laser Physics and Photonics
- C18: Mathematical Physics
- C19: Astrophysics
- C20: Computational Physics

IUPAP — Building a Global Physics Community



IUPAP connects physics communities worldwide and promotes international scientific collaboration as a driver for peace, innovation, education, and sustainable development.

Through its global network, IUPAP works to:

- Build and connect scientific communities
- Encourage collaboration and knowledge exchange
- Promote openness, integrity, and good scientific practices
- Support diversity, inclusion, and equal opportunities in physics
- Strengthen links between academia, industry, and society
- Support early-career scientists and students worldwide
- Promote open science and the free circulation of scientists
- Contribute to global dialogue and the UN Sustainable Development Goals (SDGs)

Inclusion & Diversity: IUPAP actively supports:

- Women and underrepresented groups in physics
- International best practices and inclusive standards
- Travel grants and support programs for developing countries
- Equal participation in scientific activities and leadership

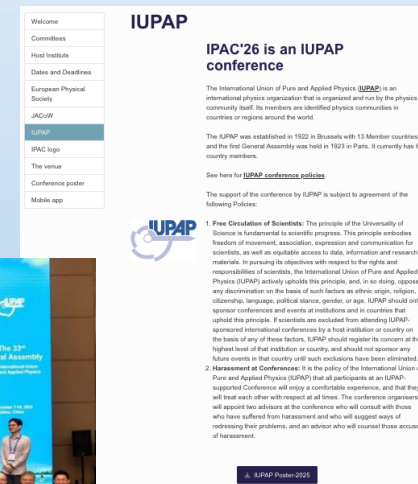


International Union of Pure and Applied Physics
To stimulate and facilitate international cooperation in physics and the worldwide development of science.

■ **IUPAP Conference Type of Support**

- IUPAP Conferences are supported either by Financial sponsorship, or through Endorsement

<https://www.ipac26.org/iupap/>



Welcome
Committees
Host Institute
Dates and Deadlines
European Physical Society
JACoW
IUPAP
IPAC logo
The venue
Conference poster
Mobile app

IUPAP

IPAC'26 is an IUPAP conference

The International Union of Pure and Applied Physics (IUPAP) is an international physics organization that is organized and run by the physics community itself. Its members are identified physics communities in countries or regions around the world.

The IUPAP was established in 1922 in Brussels with 13 Member countries and the first General Assembly was held in 1923 in Paris. It currently has 60 country members.

See here for [IUPAP conference website](#)

The support of the conference by IUPAP is subject to agreement of the following Principles:

1. Free Circulation of Scientists: The principle of the University of Science is fundamental to scientific progress. This principle embodies freedom of movement, association, expression and communication for scientists, as well as equitable access to data, information and research materials. In pursuing its objectives with respect to the rights and responsibilities of scientists, the International Union of Pure and Applied Physics (IUPAP) actively upholds this principle, and, in so doing, opposes any discrimination on the basis of such factors as ethnic origin, religion, citizenship, language, political stance, gender, or age. IUPAP should only sponsor conferences and events at institutions and in countries that uphold this principle. If scientists are excluded from attending IUPAP-sponsored international conferences by a host institution or country on the basis of any of these factors, IUPAP should register its concern at the highest level of that institution or country, and should not sponsor any future events in that country until such exclusions have been eliminated.

2. Harassment at Conferences: It is the policy of the International Union of Pure and Applied Physics (IUPAP) that all participants at an IUPAP-supported Conference will enjoy a comfortable experience, and that they will treat each other with respect at all times. The conference organizers will appoint two advisors at the conference who will consult with those who have suffered from harassment and who will suggest ways of redressing their problems, and an advisor who will counsel those accused of harassment.

A. IUPAP Physics 2026



Together, we strengthen physics for science, society, sustainability, and international cooperation !

WG14 - Accelerator Science – Particle Accelerators for Science and Society

Union of 22 international experts from 18 countries committed to promoting these objectives on a global scale, utilizing local expertise and networks!

[See the current members list here](#)

- **Knowledge exchange:** *Strengthen the global accelerator community by uniting scientists and lab leaders through collaborative platforms, fostering knowledge exchange and accelerating innovation worldwide.*
- **Promote applications:** *Support accelerator uses in industrial, medical, energy, and environmental sectors.*
- **Sustainability alignment:** *Map and review accelerator applications supporting SDGs, including life sciences, healthcare, research, and technology.*
- **Accelerate progress:** *Facilitate information sharing, joint procurement, and exchange of equipment, ideas, and personnel among labs globally.*

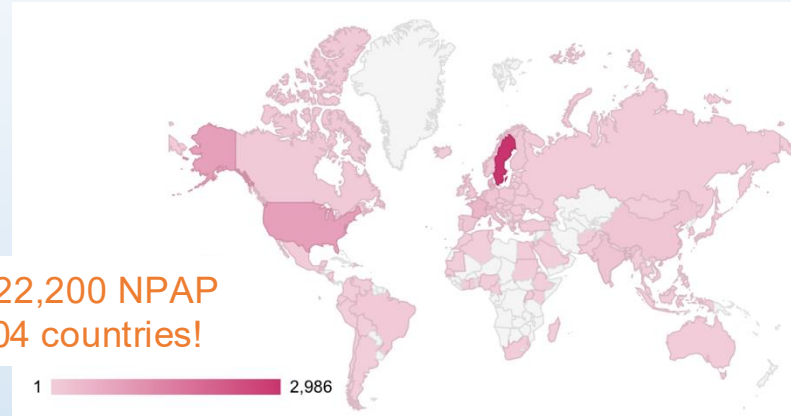


WG14 - Accelerator Science – Particle Accelerators for Science and Society

• **Talent development:** Verify feasibility to train early-career scientists through lab-university collaborations, **schools, MOOCs**, providing access to leading experts, equipment, and techniques.

• **Resources & communication:** Develop networks (e.g., Ambassadors), webpages, and conference presence to share scientific advancements and societal impacts.

NPAP reached > 22,200 NPAP learners across 104 countries!



A few Accelerator schools:

- CERN Accelerator School (CAS) – Frank Tecker Dir. & WG14 co-Chair
- Science in School @ EIROforum
- MOOCs: Nordic Particle Accelerator Project (NPAP) & Accelerate Your Teaching MOOC
- Accelerator Engagement Ambassadors Initiative



The newly appointed accelerator ambassadors, the first cohort of a new initiative by the International Union of Pure and Applied Physics

Together, we strengthen international collaboration, education, sustainability, and accelerator-enabled innovation worldwide

➤ IUPAP-WG14 Hackathonino

The main objective is to foster collaboration between Students, Mentors from Research Infrastructures (Ris) and Companies, by addressing real-world challenges with cutting-edge technologies.

Participants work closely with **researchers** and **industry mentors**, ensuring meaningful learning and engagement.

Activities are designed to build:

- **Technical problem-solving skills**
- **Teamwork & collaboration**
- **Communication & presentation skills**
- Insight into **accelerator design** and **professional design tools**

More than 44 participants and 10 challenges (fault detection, beam optics, CANS, medical accelerator, infrastructure design, learning scenarios, and quantum computing).



Timeline

- **Sunday, May 17 (11:00–12:00):** Project introduction & team building
- **Sunday, May 17 (afternoon):** Project support & student poster session
- **Monday–Wednesday:** Office hours during poster session and/or industry area
- **Wednesday, May 20 :** Project presentations & Hackathonino jury evaluation
- **Thursday, May 21:** Follow-up discussions & presentation of next challenges!

ARTIFACT team ! [“AISSAI Hackathon on AI for Particle Accelerators”](#)
Oct. 11-16, 2026 ; [MORE DETAILS HERE](#)



[2nd international Accelerator Conference for Research and Innovation](#) – Vienna IAEA - (Austria)

See also : “PHYSICS MATTERS” Colloquium series @ Forum on International Physics (FIP) at APS



Nov 2022: “PHYSICS MATTERS to celebrate the 100 years of existence of the IUPAP”

May 2023: "Entering the new century of IUPAP with a renovated vision"

Speaker: Prof. Silvina Ponce Dawson, Physics Department, FCEN-UBA and IFIE Designate, IUPAP



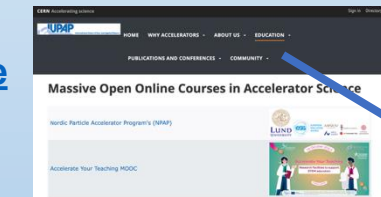
November 2023: "Accelerating Science and Society"

Thursday, November 30, 2023

"Accelerating Science and Society"

See Slides: [Slides_Carsten](#)

Speaker: Prof. Carsten P. Welsch - Distinguished Scientist @ U Liverpool, CERN and INFN



Feb. 2023: “The I.FAST CBI”

April 2024: "Forum to accelerate a global digital world"

April 2025: “Accelerating Innovation: Industry & Research Creating Value Together”

April 2025: "Accelerating Innovation: Industry & Research Creating Value Together" by Raffaella Geomatrants

Thursday, April 24, 2025

"Accelerating Innovation: Industry & Research Creating Value Together" by Dr. Raffaella Geomatrants

See slides: [Slides_RaffaellaGeomatrants_Industry](#)



See complementary information:
 • IPhO25: Summer Courses for Future Light Sources Workshop (ICS25)
 • Accelerating Science and Technology, Industry Partnerships Forum (ASTP)

Playlist !

Dec 2022: “ALBA and the science for sustainability”



Prof. Yuan He, Chinese Academy of Sciences

August 2023: "Accelerator driven systems – a solution to multiple problems of society"



Accelerating Sciences is a Matter of Facts !

SESAME Light Source (members and observers) and Developing Communities

➤ Matters for Users: Scientific Cases using Photon and Neutron Sources

➤ Particle Accelerator and large Research Infrastructure

➤ Outreach & Education

➤ Organizations & Collaborations

➤ Forums and Topical colloquia:

- ❖ Environment & Sustainable developments
- ❖ Health & Life Science



IUPAP & UNESCO



International Colloquia on Physics For Society

IUPAP and UNESCO launched this initiative within the International Year of Quantum Science and Technology (IYQ 2025), under the broader framework of the International Decade of Sciences for Sustainable Development (IDSSD 2024–2033)

- "Celebrate World Quantum Day with Prof. Anne L'Huillier - April 14!"
- "Illuminating Innovation: Synchrotron Science, Quantum Frontiers, and Africa's Scientific Future"
- "Quantum mechanics with patterns of light" by Andrew Forbes
- "Explore the intersection of **industry** and the quantum world"
- "With Nobel laureates in physics: "Quantum views" by Alain Aspect and William D. Phillips"

STAY TUNED !





Conclusion



WG14 connects the global accelerator community to accelerate collaboration, innovation, and impact.

What we do

- Share knowledge and strengthen global networks
- Enable accelerator applications for society (health, industry, energy, environment)
- Support sustainability and UN SDGs
- Foster talent and early-career development
- Increase visibility and global outreach

A driver for Peace !

Accelerator Science Transcending Boundaries at every levels !

WG14 is a catalyst for a more connected, inclusive, and impactful accelerator ecosystem worldwide.

<https://cdarve.web.cern.ch/>

