

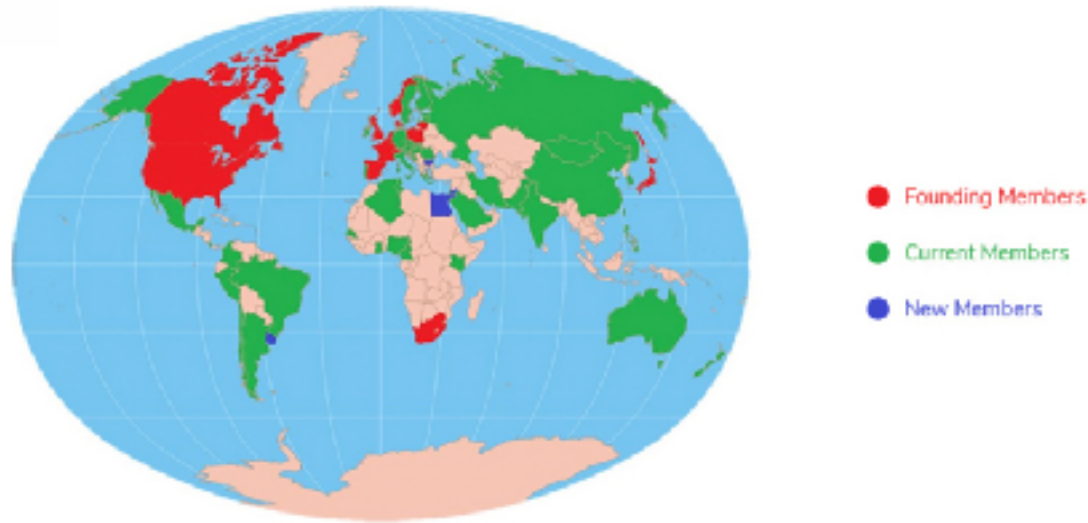
The International Union of Pure and Applied Physics, IUPAP





International Union of Pure and Applied Physics

<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 **over 50 territorial members**.

There are no individual members. Since 2021, there are also Corporate Associate Members and since 2023 a new membership category, Associated Territorial Members, for territories with very small physics communities (so far we have Nepal in this category).

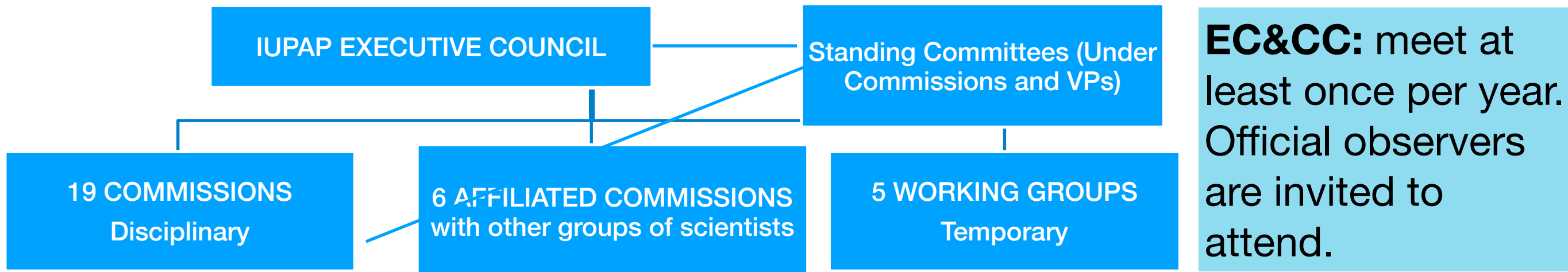
IUPAP is a network of networks, a network of communities

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

Main Governing body: General Assembly, with representatives of its members

In between GAs, the decisions are made by the Executive Council in consultation with the chairs of the specialized commissions and affiliated commissions of the Union:



Last in-person GA, in Hainan, China, Oct 2024

Last EC&CC meeting, hybrid October 2025



October 2025: (in person @ICTP-Trieste); virtual GA

Commissions (mainly organized by subfields)	Affiliated Commissions (independent)
<ul style="list-style-type: none"> • 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 • C7: Soft Matter • 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 	<div data-bbox="1322 83 2744 793"> <ul style="list-style-type: none"> • 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 (with IUHPST) </div> <div data-bbox="1322 793 2744 1265"> <ul style="list-style-type: none"> • WG5: Women in Physics (established in 1999!) • WG13: Newtonian Constant of Gravitation • WG14: Accelerator Science • WG20: Open Science. • WG21: Physics for Climate Change Action and Sustainability </div> <div data-bbox="1322 1265 2744 1661"> <ul style="list-style-type: none"> • SCCC1: Intl Committee for Future Accel (ICFA) • SCCC2: Intl Comm on Ultrahigh Intensity Lasers (ICUIL) • SCCC3: Intl Cooperation in Nuclear Physics • SCCC4: Gravitational Wave Intl Committee • SCCC5: Major Neutron Research Facilities • SCVP1: Membership and Development • SCVP2: Physics Outside Academia • SCVP3: DEI • SCVP3: Ethics and Collegiality </div>
<p>Working Groups</p> <p>Supposedly temporary structures to address specific issues not covered by commissions</p>	
<p>Standing Committees</p>	

Territorial members relate with IUPAP through their Liaison Committees, which can either be National Academies or Physical Societies.

Most IUPAP Commissions organized by physics subfields

One of the main ways in which we relate with individual members of the physics communities is through the principal activities that are supervised/organized by (most) Commissions: international conferences and awards (also through WG activities).

- **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**
- **C7: Soft Matter**
- **C8: Semiconductors**
- **C9: Magnetism**
- **C10: Structure and Dynamics of Condensed Matter**
- **C11: Particles and Fields**
- **C12: Nuclear Physics**
- **C13: Physics for Development**
- **C14: Physics Education**
- **C15: Atomic, Molecular, and Optical Physics**
- **C16: Plasma Physics**
- **C17: Laser Physics and Photonics**
- **C18: Mathematical Physics**
- **C19: Astrophysics**
- **C20: Computational Physics**

TMs and CAMs nominate members for composition (balance: # of commission members from TMs or nominated by CAMs ~ # of units paid by member)

C2-C20 decide on conferences and awards on the topics they cover. Most of them are associated with a large international conference (StatPhys, ICHEP, etc.)

Example: C3, the Commission on Statistical Physics, is one of the oldest

Established in 1945 to promote the exchange of information/views among the members of the international scientific community in the general field of Statistical Physics.

14 members (4 women), each from a different country. Chair: Janos Kertesz, Hungary; Vice-Chair: Cristina Marchetti (USA); Secretary: Chao Tang (China-Beijing)



Images from StatPhys27, Buenos Aires 2019 (~750 participants)



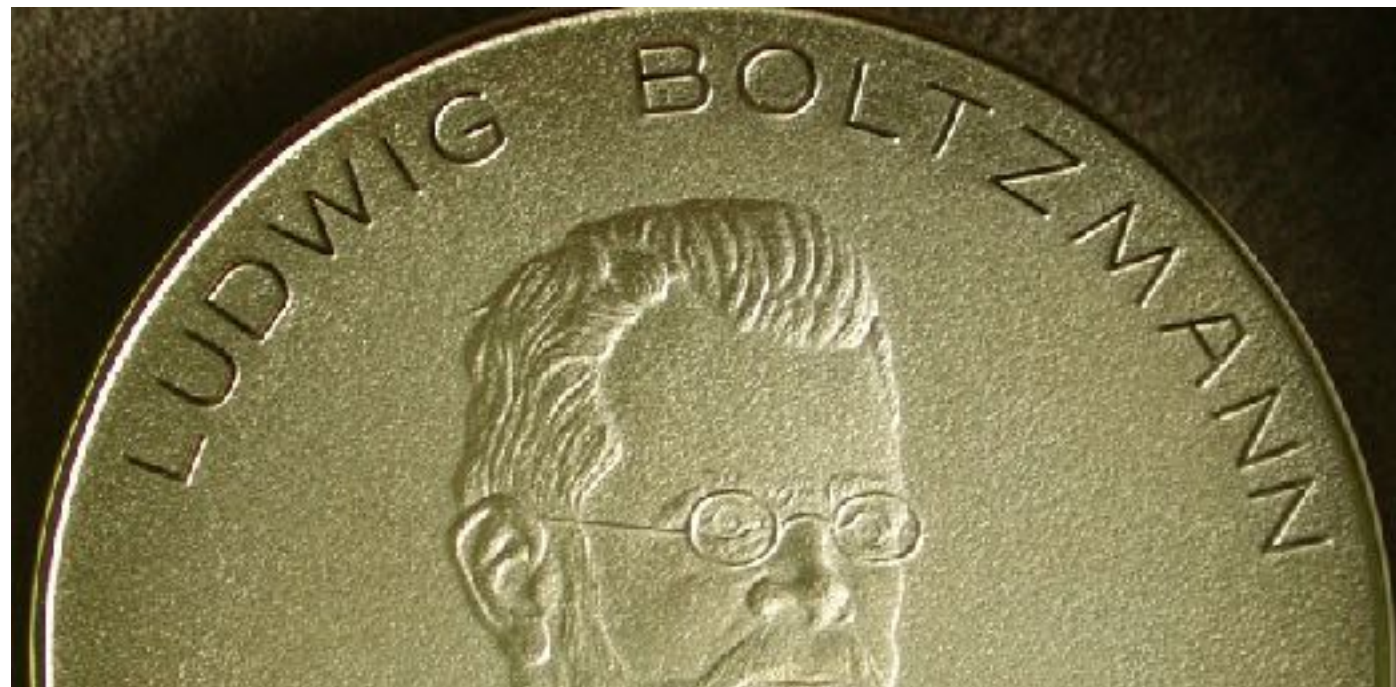
It organizes triennially the largest conference on the subject, StatPhys.



StatPhys30 will be held next year in Salvador, BA (before StPh28 in Tokyo and StPh29 in Florence)



C3 also gives, triennially, the very prestigious Boltzmann Medal



Not a single woman medalist

And the Early Career Scientist Award in Statistical Physics

Year	STATPHYS#	Recipients
1975	12	<i>K. G. Wilson</i>
1977	13	R. Kubo
1980	14	R. J. Baxter
1983	15	M. E. Fisher
1986	16	D. Ruelle and Y. Sinai
1989	17	L. P. Kadanoff
1992	18	J. L. Lebowitz and <i>G. Parisi</i>
1995	19	S. F. Edwards
1998	20	E. H. Lieb and B. Widom
2001	21	B. J. Alder and K. Kawasaki
2004	22	E. G. D. Cohen and H. E. Stanley
2007	23	K. Binder and G. Gallavotti
2010	24	J. Cardy and B. Derrida
2013	25	G. Jona-Lasinio and Harry L. Swinney
2016	26	Daan Frenkel and Yves Pomeau
2019	27	Herbert Spohn
2022	28	Deepak Dhar and <i>John J. Hopfield</i>
2025	29	Yoshiki Kuramoto and Mehran Kardar

All these awards are presented at the StatPhys conference where the Boltzmann medalists give a plenary talk and the Early Career Scientists, an invited talk at a parallel session.



Photo by Claudio Esses, Statphys27

Each Commission has its own tradition and culture. They have some independence to organize and decide their activities. Not all of them give career achievement awards. Most of them give Early Career Scientist Prizes, an important IUPAP program. Some Affiliated Commissions (which are independent bodies) also give ECSPs.

In 2022 we started the Interdisciplinary ECSP to recognize the work at the intersection of Commission and WG subfields. The first 2 gave talks at the GA.



One Early Career Prize/year/Commission/Affiliated Commission. ~200 prizes awarded in last 10 years

Candidates must have at most 8 years of research experience after PhD (career interruptions excluded). There are no self-nominations. Package contains an **ethics** statement.

Commissions are required to guarantee **diversity** of the pool of candidates (reissue call if needed).

Awardees receive a monetary award + medal and are featured on IUPAP's website and Newsletter. Some Commissions invite them to give talks at their events.

Some commissions make the call yearly, others make it once every three years. All calls are advertised at the IUPAP website, iupap.org. Please stay tuned!

New development: agreement with Frontiers in Physics for ECSP awardees to publish a mini-review. Special Topic issue just opened for submissions.



Membership in IUPAP

From IUPAP Articles of Association:

- A. Member joins IUPAP in one of the defined categories negotiated by the ECI and approved by the GA.
- B. A Member's dues are defined by the membership category. The dues for each membership category are given as a multiple of a unit, the monetary value of which is determined by the GA.
- D. A Member in arrears for three years loses its right to vote in the General Assembly, but may continue to participate in the activities of IUPAP and may nominate members to Commissions. A Member in arrears for six years is excluded from IUPAP.
- E. A Member which has resigned from IUPAP, or been excluded under Article 9 (D), may apply to rejoin IUPAP under terms negotiated by the EC, and approved by the GA.
- F. In exceptional circumstances, the EC may make a temporary adjustment to a Member's dues.

Territorial members (TMs) can be of category 1 through 18 and pay dues of as many units as their category number. The number of votes in the GA of each of these members is:

Cat 1: 1 vote; **Cat 2-3:** 2 votes; **Cat 4-6:** 3 votes; **Cat 7-9:** 4 votes; **Cat 10-15:** 5 votes; **Cat 16-18:** 6 votes

The chairs of Commissions and ACs are the only personal (*ex officio*) members of IUPAP and pay no dues. They are category 19 and each of them has 1 vote at the GA.

Corporate Associate Members (CAMs) are category 20 and pay dues of a number of units negotiated with the EC. They have no vote at the GA.

Associate Territorial Members (ATMs) are category 21, pay dues of 10% of a single unit and have no vote at the GA. ATMs are relatively small physics communities from developing territories which commit to grow. IUPAP monitors this progress over a three-year period, renewable for however long it takes to bring the territory to a level where it can realistically join IUPAP as a regular TM. They cannot nominate candidates for regular commission members (only associated commission members).

Participation of people from LAC in commissions

Full members (compared with number of units):

Argentina: 1 (1F) (units: 1)

Brazil: 11 (2F) (units: 4/8). Two CCs are from Brazil (one designated CC)

Mexico: 1 (0F) (units: 1). Perhaps Ana M Cetto will be next VP for Ethics

Uruguay: 2 (1F) (units: 1)

Past or current IUPAP members with no voting rights:

Chile (1 unit). Peru (1 unit). Costa Rica?

Names: submitted by the LCs of the TMs (but then a very difficult overall balance has to be achieved comparing members against units for all members).

There are also associated members to Commissions who can participate in the meetings and discussions without voting rights. Sometimes, they are members of other commissions or WGs or representatives of other organizations (e.g., IUPAB on C6) who are included to strengthen the relationship with these other structures.

Some times, associated members are elected among those who could not be selected as regular members (because of all the required constraints. ATMs can propose associated commission members.

The composition of WGs is not as “regulated”: Several members of WGs work outside IUPAP territorial members or are not related to CAMs.

First CAM from LAC: CLAF (about to sign the MOU)

IUPAP also addresses several transversal issues (many through WGs) which are part of the core of the Union's old and **renovated aims**:



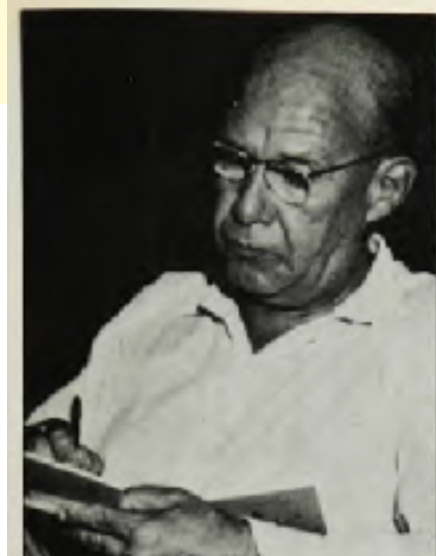
- Assist in the worldwide development of physics and **promote physics as an essential tool for development and sustainability**;
- Engage in the strengthening and improvement of **physics education**, particularly in **developing countries**;
- **Increase diversity and inclusion in physics**, enhancing the participation and recognition of **women** and of people from **underrepresented groups**;
- **Foster international cooperation** and sponsor suitable international physics meetings;
- Promote the **free circulation of scientists** and the **open access to data**;
- Enhance the vital role of **early career physicists and physics students**;
- Strengthen the links with **physicists working outside academia** and with other scientific communities;
- Uphold **openness, honesty and integrity** in the practice, application and promotion of physics;
- Promote **international agreements on symbols, units, nomenclature and standards**

IUPAP has a long tradition in science diplomacy, envisioning **science collaboration as a driver for peace**.

This was very relevant during the Cold War, promoting and helping with the **free circulation of scientists** and allowing the participation of all the physics communities willing to be part of IUPAP, overcoming geopolitical divides.

Around 1957 we stopped talking of national representatives and countries to talk of LCs and territories. In this way, both the DGR and FGR could be members as well as China Beijing and China Taipei.

There were IUPAP presidents from the USSR (Blokhintsev, 1966-69) and Poland (Sosnowski, 1978-1981) *Phys Today* 32(7), 62–63 (1979)



And now, with the situation in the Ukraine, we again followed our principle of facilitating collaborations across all borders.

In 2022 the IUPAP General Assembly unanimously voted in favor of incorporating **Ukraine as territorial member** (let me remind you that Russia is a territorial member of IUPAP too).

On the other hand, we also allow people who are excluded from participating in IUPAP-related conferences, workshops and meetings, due to their affiliation or country of origin, to request the use of IUPAP as their affiliation.

IUPAP also endorses or issues statements about matters of concern. It does it by its own initiative or as per request of some of its members which see the practice of science threatened in their own countries (e.g., letters about Brazil in 2017 or Argentina in 2024).

Inclusion and diversity

Many of the actions of IUPAP in this regard, so far, are related to gender inclusion. It started with the creation in 1999 of **WG5, Women in Physics** (Marcia was its 1st chair), with the mandate

- to survey the present situation and report to the Council and the liaison committees.
- to suggest means to improve the situation for women in physics.



WG5 in 2000 @White House.

This led to the establishment of a (still) very active network of WGs in more countries than IUPAP territorial members (especially, in developing countries). It is a successful story of community building.



Working Group, 2017



With Karen Hallberg @1st ICWIP presenting the data on Argentina

I started my relation with IUPAP as the leader of the Argentinian WG on WiP



The first actions of the WG marked its subsequent trajectory:

- network structure in terms of country teams (that report on their actions@ICWIPs)
- surveys (first for women only, then for all genders).
- International Conference on Women in Physics (ICWIP) which produce recommendations for various actors including IUPAP (it led to lots of changes!)

Next ICWIP: in Singapore in 2027.

Then: -Travel Grants for early career physicists from developing countries (yearly)

Physics for development. We have postponed the discussion on how to better address this transversal issue. What we are doing now:

The Commission on Physics for Development (C13) has existed for over 30 years to help improve the conditions of physics and physicists in developing countries



C13 bestows the IUPAP Medal for Outstanding Achievements in Physics for Development, once every three years (last awardee: Malik Maaza)

IUPAP has a special line of funding for conferences and workshops to be held in developing countries (Type D conferences) that are analyzed by C13.

IUPAP is also part of the

Lightsources for Africa, the Americas, Asia, Middle East and Pacific



<https://laamp.iucr.org/>

Started in 2016 with an ISC grant awarded to IUPAP & IUCr for the project ***Utilization of Light Source and Crystallographic Sciences to Facilitate the Enhancement of Knowledge and Improve the Economic and Social Conditions in Targeted Regions of the World***

The aim is to enhance Advanced Light Sources (AdLS) and crystallographic sciences in targeted regions, in collaboration with IUCr and ICTP and now IUPAB.

One of its activities FAST grants for Faculty-Student teams to visit AdLS facilities which are partners of the project (LNLS in Campinas is a partner).

After its centenary in 2022, IUPAP underwent internal and external evaluations

We had a rejuvenation task group which made a proposal to redefine some of its structures and activities to increase IUPAP's impact and visibility.

We started to implement the changes in 2026. The creation of SCs is part of these changes.

New initiatives started recently to increase visibility



IUPAP is seeking Expressions of Interest for hosting the General Assembly and restarting the IUPAP International Conference on Physics series in 2027



IUPAP & UNESCO International Colloquia on Physics for Society



Call to have an International Conference of Physics organized in conjunction with the next in person GA to be held in 2027

Series of joint colloquia with UNESCO

We also partnered with ICTP to sponsor some of the projects submitted to Physics without Frontiers.



Physics Without Frontiers

The proposal presented by a group of Southern African countries led by SAIP won. The next GA will take place in Johannesburg in 2027 together with a Conference on Physics for Sustainability.

Some ideas of IUPAP's actions that can be useful for the physics communities of LAC (we will discuss at length later):

Actions/ideas to increase inclusion and diversity beyond gender.

Contribute to the establishment of collaborative networks across the region through the funding of workshops, schools conferences held in countries with less developed physics communities but with people from more developed LAC countries directly involved in the organization.

Engage small physics communities as ATMs

We are also evaluating the acceptance of groups of countries as one (full) territorial member

Engage in projects to build research communities, such as the Lightsources for Africa, the Americas, Asia, Middle East and Pacific (LAAAMP) project that IUPAP supports together with IUCr and ICTP (Sirius is a partner in LAAAMP)

Endorse collaborative projects across the region (e.g., LASF4RI)

Communication: establish a scheme to share news on developments in the region

Creation of an Affiliated Commission on Physics in LAC?

Funding is always a big concern: Corporate membership: potential members from the region? Can this help pay membership units of certain territories (a solidarity scheme)?

We also need a greater involvement of the physics communities in LAC

Be more active in engaging with the activities of Commissions and other IUPAP structures

Respond to IUPAP calls for input

Submit proposals of candidates for awards

Engage in projects to build research communities, such as LAAAMP (we can think of others)

Submit proposals to organize some of IUPAP's flagship conferences

Submit proposals of conferences or workshops to be sponsored or endorsed by IUPAP

Identify possible new CAMs in the region (and invite them)

Bring ideas for new projects

Thank you!

Main points on restructuring (the only ones requiring resolutions and changes in Articles and Internal Regulations).

Creation of a **new type of structure**, *Standing Committees*, with two subtypes:

- ***Standing Committees under Commissions.***
- ***Standing Committees under Vice-Presidents at-large***

Standing Committees under Commissions constitute a platform for the discussion at a global scale among the leading actors in the field they cover. They have direct links with one or more IUPAP Commissions. The Chair of one such Commission should serve in an *ex-officio* capacity within the relevant structures of the Standing Committee and be kept informed of its decisions; the Chair may, at their discretion, designate a Commission member to act as the interface with the Standing Committee. The organization, composition and terms of reference of these Committees are defined by each of them in consultation with the Commission(s) whose Chair(s) is serving on some of their internal structures. The structure and terms of references must be submitted together with a recommendation of the corresponding Commission Chair for the approval by the IUPAP Executive Council before entering into effect. SCs shall submit reports to the GA and EC.

WG1 (ICFA), WG7 (ICUIL), WG9 (ICNP) and WG11 (GWIC) become Standing Committees Under Commissions:

- ICFA <-> C11
- ICUIL <-> C17, C16, C15
- ICNP <-> C12
- GWIC <-> C4, C19. GWIC will also keep a strong tie with the International Commission on General Relativity and Gravitation (IUPAP's AC2).

New SC on Major Neutron Research Facilities: under C10 (Str & Dan Cond Matt)

Standing Committees under Vice Presidents at Large can have different purposes depending on their nature. All of them should include in their mandate to give advice to the Executive Council in their area of expertise. Their composition will be decided by the Executive Council in consultation with the corresponding Vice President at Large. The Vice President at Large acts as Chair of the Committee, is responsible for liaising between the Executive Council and the Committee and for submitting the Committee's written report to each General Assembly and to the Executive Council meeting immediately preceding each General Assembly.

WG16 (Physics and Industry) and **WG18** (Ethics) become **Standing Committees Under VPs at-Large**:

- **WG16** becomes the ***SC on Physics outside Academia***. The position of **Vice-President at-large for Physics Outside Academia** is **created** in the IUPAP **Executive Council**, to be occupied by **Christopher Rossel** until the 2027 GA.
- **WG18** becomes the ***SC on Ethics***. The VP at-Large for Ethics and Outreach, will oversee this SC.

Their Mission/Mandate is kept as they are. The corresponding Vice-Presidents are charged with bringing a proposal during 2026 for the consideration of the EC about the Mission/Mandate and composition of these SCs, which could remain the same as before the transformation or not. To advance with the latter, a consultation with IUPAP's members is encouraged.

The recently created **Membership Committee** becomes **Standing Committee on Membership and Development** under the corresponding Vice-President at-Large keeping its current composition and Terms of Reference.