

International Committee for Future Accelerators (ICFA), a Standing Committee under the Commission C11 (Particles and Fields of the International Union of Pure and Applied Physics, IUPAP)

Terms of Reference

(as approved at ICFA Executive meeting of April 16th, 2025)

Foreword

The International Committee for Future Accelerators (ICFA) has been in existence now for five decades. Its origins date back to the 1960s, when a series of East-West meetings reviewed the perspectives of the then rapidly growing field of high-energy particle physics.

In 1975, some 50 leaders of the field of accelerator-based particle physics passed a resolution recommending the formation of a group to study the scientific, technical and organisational problems in the globally collaborative construction of very large accelerators. This resolution led IUPAP's Commission 11 (C11: Particles and Fields) to create ICFA in 1976, with formal establishment in 1977, as a Working Group.

Today, ICFA plays an important role in facilitating discussions on the global scale among the leading actors in the field, in particular the largest accelerator laboratories world-wide. ICFA allows for coordination about the status of and plans for future accelerator facilities and the related physics programmes and technology developments, and it aims at international coordination of the connected national and regional activities. Some of the facilities of interest of ICFA, are extremely complex and their development, construction and physics exploitation extend over several decades (e.g. more than 50 years for the full LHC programme from first ideas to end of operation).

The importance of the Committee for the field of particle physics and its long-term nature, provided the motivation for recently suggesting to IUPAP a standing/long-lasting ICFA Committee as opposed to a short-living WG, namely a Standing Committee under C11: Particles and Fields Commission, of IUPAP.

This document formally presents ICFA's mandate – as defined in 1985 – and the committee's Terms of Reference.

1. Mandate

ICFA is defined as a Standing Committee¹ under C11: Particles and Fields Commission under the auspices of IUPAP, and operates in close collaboration with it. The committee was created to facilitate international collaboration in the construction and use of accelerators for high energy physics. One might describe ICFA as a facilitator for the particle physics community.

Formally, ICFA's aims and mandate, as redefined in 1985, are as follows²:

- to promote international collaboration in all phases of the construction and exploitation of very high energy accelerators;
- to organise regularly world-inclusive meetings for the exchange of information on future plans for regional facilities and for the formulation of advice on joint studies and uses;
- to organise workshops for the study of problems related to super high-energy accelerator complexes and their international exploitation and to foster research and development of necessary technology.

2. Membership

The Committee consists of 16 members, a chair and a scientific secretary, selected primarily from the countries and regions with the most active programmes in high-energy physics. The 16 members are currently distributed across regions and countries as follows: CERN member states (3), Russia (2), USA (3), Canada (1), Latin America (1), Japan (2), China (1), India (1), Oceania & Asia (1), and the C-11 chair (ex-officio member). The chair has voting rights in Committee meetings.

ICFA members are nominated by designated authorities in their countries or regions; membership includes the directors of the major labs of our field in the world, and representatives of regional or national high-energy physics programmes. The ICFA chair is proposed by the ICFA members. Nominations of ICFA chair and committee members are followed by C11 approval. The scientific secretary is designated by the ICFA chair.

Member terms last three years and can be renewed, while the chair holds a single three-year term. The positions of chair and scientific secretary rotate among the three world regions Americas - Asia - Europe.

The ICFA chair reports annually to the IUPAP Secretary and General

¹ The naming of "Standing Committee" is provisional, and subject to final discussion and approval by IUPAP Executive Council

² <https://icfa.hep.net/what-why-who>

Assembly, and to the C11 chair, updating them on progress and strategic goals.

3. Meetings

ICFA meetings are typically held three times a year, with two shorter, purely virtual meetings and one longer in-person meeting. The two virtual meetings – typically held in spring and in autumn – usually last for about 3-4 hours and include update presentations from all regions, countries and major laboratories. In additional, individual presentations e.g. from the ICFA panels or external experts might be arranged.

One meeting per year is organised as a purely in-person meeting, typically connected to one of the major international summer conferences. At this meeting, presentations from all ICFA panel chairs and others are also scheduled. Invitations are also extended to additional experts, or to additional representatives of large laboratories, etc. This allows a much more extensive discussion on the relevant topics. Care is taken to provide sufficient discussion time.

At each meeting an executive session restricted to ICFA members is held, to discuss items and issues specific to the committee (membership, panel setup, etc.).

Decisions at ICFA are taken preferably by consensus. Should that not be possible for an individual question, a qualified majority (2/3 of expressed votes, rounded up) must be reached (in person or remotely). ICFA meetings are considered valid for decisions if at least 2/3 of members (rounded up) are participating, in person or remotely.

ICFA Seminars are an important event for the operation of the committee, and are usually held every three years. The seminars usually take place at a major particle physics laboratory, with a rotation among the three world regions, and have an invitation-only worldwide attendance, including leading scientists, government science officials, and media representatives. Review talks are given at the seminars on the state and prospects of accelerators, particle physics, and related fields around the world. The seminars are typically attended by 200-250 persons. A special care is reserved to ensure the presence of an adequate number of early-career people, as these meetings give them both exposure to the international community and the opportunity to see the worldwide landscape of the field.

4. Panels

4.1 Setup, mission and mandate

Whenever an international discussion and collaboration is needed on accelerator and particle physics topics of a technical nature, or at a very detailed level, and where the required expertise is beyond that of the individual ICFA members, ICFA can set up a panel.

The proposal for a panel can originate within the ICFA membership or can come from the community through one or more of the ICFA members. Panels typically have a dedicated purpose and a limited lifetime: they can be terminated by an ICFA decision. The proposal for a new panel needs to be discussed at an ICFA meeting and formally approved by ICFA.

Each panel is composed of typically up to 16 experts from all regions with relevant domain knowledge, adequately representing the diversity of the community.

Currently, the following ICFA panels are active:

- Instrumentation Innovation and Development;
- Beam Dynamics;
- Advanced and Novel Accelerators;
- Sustainable Accelerators and Colliders;
- Data Lifecycle;
- ILC International Development Team.

ICFA provides a mission and a mandate for each of the panels at the time of its creation. Missions and mandates are revisited on a regular basis, at least every three years, and, if needed, updated in consultation with the panel chair. The panel chair is advised to consult with members to get feedback on proposed changes.

4.2 Membership

ICFA appoints the panel chair upon a list of candidates submitted through ICFA members or panel members. A short CV and a statement from the candidates should be provided with the nomination. The panel chair is then selected by ICFA, from among the candidates nominated, either by consensus or by a vote.

ICFA also approves the appointment of new panel members, following the proposal of panel chairs. Generally, terms of mandate of panels chairs and members are three years, once renewable. For a newly formed panel, ICFA will appoint the members and the chair of the panel.

Panel members are appointed by ICFA to staggered three-year terms. While approving members of a panel, ICFA should aim, in addition to the specific expertise of the candidates, for achieving regional balance and diversity.

4.3 Panel activities

Each panel organises its own programme, in accordance with the panel's mandate. The activities can include workshops, newsletters, schools, awards, etc. Panels can also sponsor and / or endorse workshops and other events and can recommend international events for ICFA sponsorship and / or endorsement. The panels may also provide an accessible pool of experts on various technical aspects relevant to the mission of ICFA.

Panel chairs report to ICFA at one of the regular ICFA meetings at least once per year, and more frequently upon request.

5. Other ICFA activities

ICFA, when considered of relevance, and on the proposal of ICFA members, issues Statements supporting specific subjects, initiatives or events on topics correlated to worldwide high energy physics community.

According to IUPAP regulations, Statements are issued in the own name of ICFA in its area of expertise, and are subject to approval by the IUPAP President, with a recommendation of the C11 Chair.

On request, ICFA can endorse workshops and conferences. Requests for endorsement can be brought forward by any of the ICFA members or any of the ICFA panels (via its chair). Details on endorsement rules and procedures are available on ICFA website.

ICFA activities, statements, and meetings are made public through standard electronic outreach channels (web site, bulletins, mailing lists, etc.).

6. Amendments to the Terms of Reference

Amendments to these Terms of Reference may be requested by ICFA members. The proposed amendments are then discussed in a dedicated session of an ICFA executive meeting, which is considered valid for decision, if at least 2/3 of members (rounded up) are participating, in person or remotely. A qualified majority (2/3 of expressed votes, rounded up) must be reached, in person or remotely, for approval.

Then, amendments are submitted for the approval of the Executive Committee of IUPAP with a recommendation from C11, and they take validity at the beginning of the year succeeding the one of approval.