

View from ICFA

Endine Contraction

Community Summer Study SN X WMASS July 17-26 2022, Seattle

July 25, 2022

Stuart Henderson ICFA Chair Director, Thomas Jefferson National Accelerator Facility



What Is ICFA?

- The International Committee for Future Accelerators, was created to facilitate international collaboration in the construction and use of accelerators for high energy physics. Created in 1976 by the International Union of Pure and Applied Physics, its purposes, as stated in 1985, are as follows:
 - To promote international collaboration in all phases of the construction and exploitation of very high energy accelerators.
 - To organize 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 organize 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.

ICFA fosters discussion on international aspects of particle physics, in particular the large accelerators that are at the heart of the field. ICFA brings together laboratory directors and representatives from the field to serve as global advocates and facilitators for the particle physics community.

ICFA Membership

Seventeen members covering global regions with significant particle physics activities

S. Henderson, Chair, USA T. Schörner, Secretary, Germany K. Jakobs, CERN Member States (incl Europe outside CERN, Turkey, Ukraine, Israel, Africa) F. Gianotti, CERN Member States B. Heinemann CERN Member States L. Merminga, USA S. Dasu, USA I. Koop, Russia V. Obraztsov, Russia Y. Wang, China G. Taylor, Other Countries (Asia) I. Bediaga, Other Countries (Latin America) S. Krishnagopal, Other Countries (incl. Near / Middle East) T. Mori, Japan M. Yamauchi, Japan M. Roney, Canada F. Canelli, Chair of the IUPAP C11 Commission on Particles and Fields (ex officio)

What Does ICFA Do?

ICFA Meetings

- ICFA meets regularly, usually twice per year, often associated with a major particle physics conference. It is an extremely valuable forum for exchange of information across regions and laboratories
- ICFA may take action in the form of recommendations that are made public
- As ICFA speaks for the global particle physics community at the level of Laboratory Directors and regional representatives, those recommendations tend to carry weight

ICFA Seminars

Every three years, ICFA organizes a Seminar on Future Perspectives in High-Energy Physics that reviews the state of
accelerators and particle physics research around the world. Invited attendance is usually limited to ~150-200, chosen
from the regions of the world; science officials from governments are also invited. The most recent was in Ottawa in 2017.

ICFA Panels and Committees

- ICFA has formed several Panels, each focused on a specific topical area with high international relevance.
- Panels are typically quite active, organizing schools, workshops and publications on their specific topics, serving as invaluable resources to the international particle physics and accelerator science and technology communities.
- ICFA has formed steering committees and boards to oversee and coordinate global efforts for the ILC.

ICFA Panels and Committees

- ILC International Development Team (Chair Tatsuya Nakada, EPFL, Lausanne)
- ICFA Instrumentation Innovation and Development Panel (Chair Ian Shipsey, Oxford)
 - ICFA Instrumentation Awards announced December 2021
- ICFA Beam Dynamics Panel (Chair Yunhai Cai, SLAC)
 - Regular review articles established in JINST
- ICFA Panel on Advanced and Novel Accelerators (Chair Philippe Piot, Argonne/NIU)
- ICFA Standing Committee on Interregional Connectivity (Chair Harvey Newman, Caltech)
- <u>ICFA Study Group on Data Preservation in High Energy Physics</u> (Chair Cristinel Diaconu, CPPM, Marseille)
- ICFA Panel on Sustainable Accelerators and Colliders (Chair Thomas Roser, BNL)
 - Mandate broadened to include accelerator technology in energy and environment

ICFA Role in Linear Colliders: 1990-2020

- 1990s: a growing consensus was emerging that a linear e+e- collider with center of mass energy in the 100s of GeV to ~TeV was the next major accelerator needed for the field following the Tevatron and LHC hadron colliders.
- 2000: Since no nation was ready to take the lead on the R&D and design of this machine, ICFA itself took role to organize linear collider activities for the world particle physics community, and has continued to do so to the present time.
- 2002: ICFA formed the International Linear Collider Steering Committee (ILCSC) to facilitate the realization of the International Linear Collider (ILC) as a global collaborative effort.
- 2003: a Parameters Committee set up by the ILCSC produced a recommended set of performance parameters for the ILC
- 2003-2004: ILCSC set up the International Technology Recommendation Panel, chaired by Barry Barish, to recommend which of the two competing main linac technologies to pursue: room temperature X-band (11.4 GHz) and superconducting L-band (1.3 GHz); the panel recommended to pursue the superconducting option, which was accepted by ICFA.
- 2005: The ILCSC set up the Global Design Effort (GDE) to produce a technical design for the ILC, with Barry Barish serving as Director. The Technical Design Report was completed in 2012 and published in 2013; GDE and ILCSC completed mandate in 2013.
- 2013-2020: ICFA established the Linear Collider Board (LCB) to succeed ILCSC; in addition to overseeing the work on the ILC, the LCB also incorporated CLIC project activities and the CLIC and ILC detectors. Under the LCB, the Linear Collider Collaboration (LCC) (with Lyn Evans as Director) coordinated and directed the global effort towards realizing a linear collider.



S. Henderson, Snowmass, July 25, 2022

Recent ICFA International Linear Collider Activities More from T. Nakada

- ICFA formed International Development Team in August 2020 to support the Japanese HEP community effort to host the ILC as a global project by preparing the ILC Pre-Lab
 - Clarify the function and organization of the ILC Pre-lab
 - Develop a common understanding for the condition to start the ILC Pre-Lab
 - Provide an international framework for the ILC accelerator effort
 - Provide an international framework for the ILC physics and detector activities
 - Negotiate with international scientific partners...for resources needed for the ILC Pre-lab
 - Work with national authorities to help in...establishing the ILC Pre-lab
- MEXT Advisory Panel reviewed ILC Pre-Lab proposal and considered the establishment of Pre-Lab to be premature, while recommending continued R&D and global collaborative efforts

ICFA Perspective: Statement April 10, 2022

- ICFA reconfirms the international consensus on the importance of a Higgs Factory as the highest priority for realizing the scientific goals of particle physics.
- ICFA also reaffirms the importance of the regional planning activities that have recently been completed and those underway, which for decades have underpinned the global strategy for the field.
- ICFA reaffirms its position that the concept for the ILC is technically robust and has reached a level of maturity which supports its moving forward with the engineering design study toward its timely realization.
- ICFA commits to continuing efforts within the International Development Team (IDT) over the next year to coordinate the global research community's activities toward further developing and realizing the ILC in Japan. In particular, the IDT will work to further strengthen international collaboration among institutes and laboratories, and to expand the broad support from various stakeholders.
- ICFA continues to encourage inter-governmental discussion between Japan and potential partner nations to advance international collaboration toward important research and development activities as well as coordination toward realization of an ILC.

Summary

- Since the 1970s ICFA has served a key role in fostering global cooperation and collaboration in our field, working to help the community realize its goals
- ICFA supports strong international collaboration that continues to be a unique strength in the field
- ICFA continues to support the world's regional planning efforts and commits to serving our role as advocates and facilitators for the global particle physics community
- ICFA is very enthusiastic about the scientific opportunities that lie before us, and ICFA looks forward to the results of the U.S. Snowmass and P5 planning process