



ICFA Report

IUPAP C11 Meeting

19 August 2021

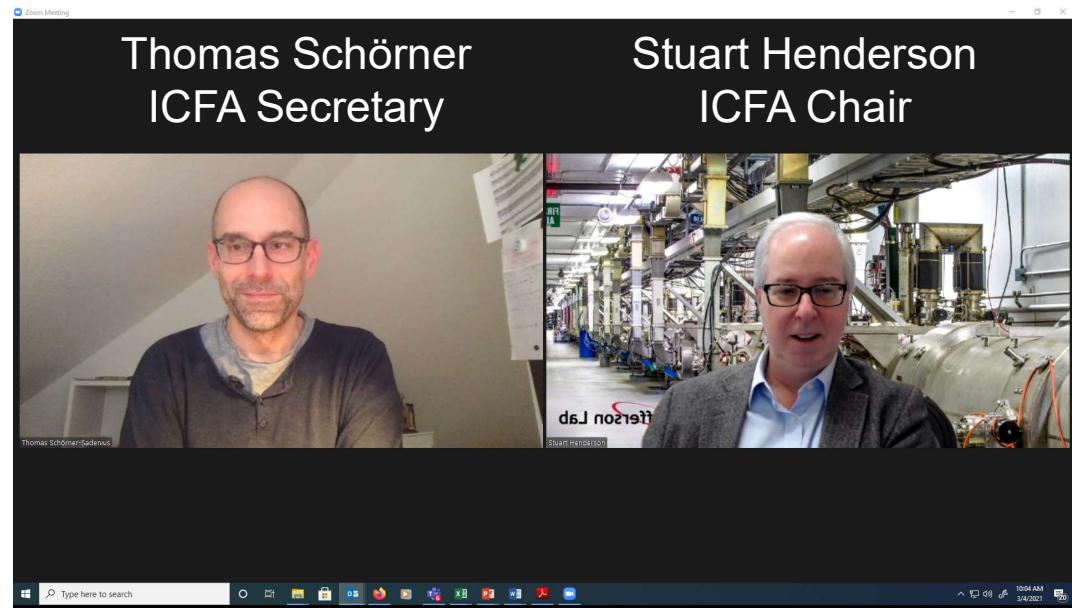
Stuart Henderson
ICFA Chair

Director, Thomas Jefferson National Accelerator Facility



Activities Since IUPAP C11 Meeting in August 2020

- New ICFA Chair and Secretary
- ICFA Winter Meeting March 11-12, 2021
- ICFA Summer Meeting July 14, 2021
- ILC International Development Team (IDT)
- ICFA Seminar Planning
- ICFA Panels: Updates to Mandates, leadership



ICFA Members

S. Henderson, Chair, USA
T. Schoerner-Sadenius, Secretary, Germany
K. Jakobs, CERN Member States
F. Gianotti, CERN Member States
T. Behnke, CERN Member States
N. Lockyer, USA
J. Incandela, USA
Z. Huang, USA
I. Koop, Russia
V. Obraztsov, Russia
Y. Wang, China
G. Taylor, Other Countries (Past Chair)
I. Bediaga, Other Countries
D. Das, Other Countries
T. Mori, Japan
M. Yamauchi, Japan
M. Roney, Canada
H. Schellman, Chair of the IUPAP Commission on Particles and Fields (ex officio)

ILC International Development Team

To prepare 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**
 - Coordinating further R&D and engineering design work...for a smooth transition to the ILC Pre-lab phase
- Provide an international framework for the **ILC physics and detector** activities
 - Coordinate physics and detector R&D effort...for smooth transition to the ILC Pre-lab phase
- **Negotiate with international scientific partners**...for **resources needed** for the ILC Pre-lab, and
- Work with **national authorities** to help in...**establishing** the ILC Pre-lab

ILC International Development Team

Activities

- Three Working Groups formed to carry out work of IDT
- Technical Preparation and Work Packages for ILC Pre-Lab
- Pre-Lab proposal developed and submitted to MEXT June 2, 2021 (<https://arxiv.org/abs/2106.00602>)

Proposal for the ILC Preparatory Laboratory (Pre-lab)

International Linear Collider
International Development Team

1 June 2021



Figure 2: Summary of work packages.

ILC International Development Team

Situation regarding Pre-Lab

- ICFA Letter to MEXT Minister Hagiuda, March 17, 2021
- Letter from MEXT Minister Hagiuda to ICFA Chair: May 31, 2021
 - *“Under the current situation that the perspective of broad internal and external cooperation for the ILC project itself as well as its pre-laboratory is not promised, it is difficult to obtain the Japanese citizens’ understanding for investing in the pre-laboratory*
 - *It is necessary to obtain the clear perspectives on financial contributions to the ILC project itself by the United States and European countries prior to considering the pre-laboratory budget.”*
- Present Status
 - MEXT did not request FY22 budget for Pre-Lab
 - MEXT has re-engaged the MEXT ILC Advisory Panel to assess progress, prospects for international cooperation and cost sharing, academic significance, technical feasibility, cost estimate, etc.
 - MEXT will begin to contact the US and European counterparts to discuss potential collaboration
 - MEXT says: “With regard to the above-mentioned discussion, considering the comments from the US and European counterparts, it would be important that the progress of communications between particle physics researchers in the US and European countries and their government authorities is made.”

ICFA Seminar

Requested IUPAP Endorsement

Will be considering options in response to evolving pandemic situation

- Timely theme of Future Perspectives, given the European Strategy, the Snowmass Activity, science in the (post) pandemic era, and growing emphasis on climate change



Towards a global strategy for particle physics

Due to the Covid-19 crisis, the ICFA2020 Seminar is shifted to 28-31 March 2022. Still, the BBAW in Berlin will be the venue. Stay tuned for updates!

Every three years, the [International Committee for Future Accelerators \(ICFA\)](#) organises a seminar on "Future Perspectives in High Energy Physics". This is a four-day international exchange of information concentrating on plans for future facilities in the field of particle physics. This by-invitation-only meeting has 250 participants, including directors of most of the world's major laboratories in our field, senior particle and accelerator physicists, and government science officials from several countries.

The 13th ICFA Seminar on Future Perspectives in High -Energy Physics is organised by the [Deutsches Elektronen-Synchrotron DESY](#).

ICFA Seminar shifted to 2022

Due to the Covid-19 crisis, the next ICFA seminar will be held only in 2022, from 28-31 March. The location will still be the BBAW in Berlin. Stay tuned!

ICFA Seminar 2020: location defined!

The 13th ICFA Seminar will take place from 12-15 October 2020 at the "[Berlin-Brandenburgische Akademie der Wissenschaften](#)" in downtown Berlin, Germany.

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ICFA Panel Updates

ICFA Beam Dynamics Panel Summary

August 2021 / Ingo Hofmann (GSI Darmstadt)



Task: To encourage and promote international collaboration on beam dynamics studies for present and future accelerators via Workshops (formal Advanced BD- and Mini- Workshops) and Newsletters etc.

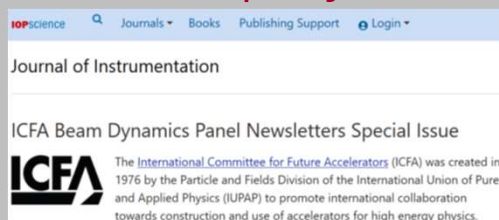
Four biennial series of Advanced Beam Dynamics Workshops (last in 2019):

- 3 postponed** to after pandemic: eeFACT (e^+e^- colliders)
 - ERL (energy recovering linacs)
 - FLS (future light sources)
- 1 converted** into online seminar in Oct 21 (FNAL):
 - HB (high intensity beams)

Mini-Workshops (4 in 2019) all suspended during pandemic

Regular Newsletter on international „state of the art“ in beam dynamics issues:

- reached **#82 since start in 1987**
- in **2020 transformed** from internal report format to a „Special Issue“ in *Journal of Instrumentation* (JINST) (refereed) – typically 10 articles /Issue
- for 2022 plan joint Issue with Advanced and Novel Accelerators Panel (ANA)



ICFA Panel on Sustainable Accelerators and Colliders

- **Panel mandate** (expanded to include sustainable energy production): Assess and promote developments on energy efficient and sustainable accelerator concepts, technologies and strategies for operation, and assess and promote the use of accelerators for the development of Carbon-neutral energy sources.
- **Panel members:** <https://icfa.fnal.gov/panels/sustainable-accelerators>
 - New panel chair: Thomas Roser, BNL (retired), as of August 2021, replacing Mike Seidel, PSI/EPFL
- **Topics:**
 - **Accelerator concepts for sustainability:** Accelerators based on superconducting or permanent magnets, Energy Recovery Accelerators and Colliders, Muon Colliders, Accelerator Driven Subcritical Reactors
 - **Energy efficient technologies:** low-loss superconducting resonators, efficient RF sources, accelerator-quality permanent magnets, efficient cryogenic systems, superconducting electrical links, heat recovery in aquifers, short-term energy storage
 - **General sustainability aspects:** carbon footprint analysis, water consumption, environment friendly materials, lifecycle management, helium as a scarce resource
- **Activities:**
 - US Snowmass 2021, Lol submitted by the panel: “Fostering the development of energy efficient and sustainable technologies and concepts for accelerator driven research infrastructures.”
 - In preparation: Sixth Workshop on Energy for Sustainable Science at Research Infrastructures, hosted by ESRF, Grenoble, France with support through CERN, PSI, DESY

Status report on ANA panel



International Committee for Future Accelerators
Panel on Advanced and Novel Accelerators

- Mission statement:
 - To extend and support the international collaboration and communication in the field of new acceleration techniques.
- Activities on ALIC (ANA-based linear collider)
 - Joint force/share resources: ANA technologies have similarities
 - Devise a *global* strategy (instead of “local” focuses on a particular ANA technologies)
 - Established the Advanced LinEar collider study GROup (ALEGRO) to work on ALIC
- Planned activities (short term ~1 yr)
 - European Advanced Accelerator Concept (EACC21) workshop (September, hybrid)
 - ICFA BD newsletter issue focused on beam dynamics challenges in ANA-based accelerators
- Past-year activities:
 - Advanced Accelerator Concept (AAC20) workshop (endorsed, organized by LBNL) as a virtual meeting (from Nov. 20 to Feb. 21)
 - Endorsed High-Gradient (HG2021) workshop (Apr. 21)
 - Organized the “Accelerator Track session 5 5” focused on ANA at the CW21 (Apr, 21)
 - ALEGRO represented at the 2020 European Strategy for Particle Physics
 - Engaged in the SnowMass 2021 process (1 letter of interest on ALIC submitted)
- Problems/challenges:
 - The ALEGRO workshop series was put on hold (last workshop in 2019) due to pandemic

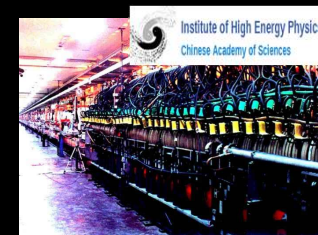


ICFA Instrumentation, Innovation and Development Panel Summary

August 2021 I.Shipsey (Oxford)

Mission: The ICFA-IID stimulates world inclusive involvement in the innovation and development of new instrumentation for experiments at future accelerators.

Excellence in Detector Instrumentation Technology (EDIT) School (held at major labs) VII Edition delayed by the pandemic to July, 2022 IHEP Beijing. Status: advanced planning stage.



ICFA Instrumentation School (held in less developed nations) XVI edition delayed by the pandemic to Nov. 2022/March 2023 TIFR Mumbai. Status: advanced planning stage.



Instrumentation Awards (one senior, one junior) created July, 2021: aim for first awardees in 2022.

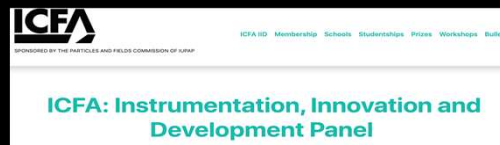
Instrumentation Studentships: conducted a survey of best practice and now developing a proposal to seek funding (UNESCO & EU) to create a pilot program of studentships partnering national labs and universities modelled on the CERN Technical and Doctoral Student & US DOE HEP GIRA programs.



Enhancing Interdisciplinary Interactions: stimulation and encouragement of the community to include interdisciplinary sessions in existing conferences and to consider creation of dedicated workshops.



New ICFA-IID Panel Website linked to main ICFA page.





ICFA Standing Committee on Inter-regional Connectivity



■ **Missions**

- *Inform and enable the global community to use networks effectively in support of its science goals*
- *Track advanced computing, storage, network and associated software technologies; highlight opportunities and coming issues*
- *With a focus on major programs: LHC to HL-LHC, LIGO, LSST, SKA, DUNE et al*
 - *Enabling communities in all parts of the world to work effectively as full partners in these programs*
- *Track and help understand and set requirements via both community meetings (e.g. LHCONE/LHCOPN) and agency reviews (e.g. ESnet in 2020-21)*
- *Bring Issues to the attention of ICFA*

■ **Activities**

- *Work with R&E network partners to help develop the continental, transoceanic and regional network infrastructures*
- ***Founded the Global Network Advancement Group (GNA-G) and its working groups in 2020 as a major venue uniting the R&E networks and science collaborations worldwide behind the mission***

■ **Beyond the Basic Infrastructures:**

*Formation of a global programmable fabric supporting data intensive research
Learning from and going beyond the LHCOPN/LHCONE experience*

- *Developing integrated systems including networks as a first class resource, across the US, Europe, Asia Pacific and Latin America*

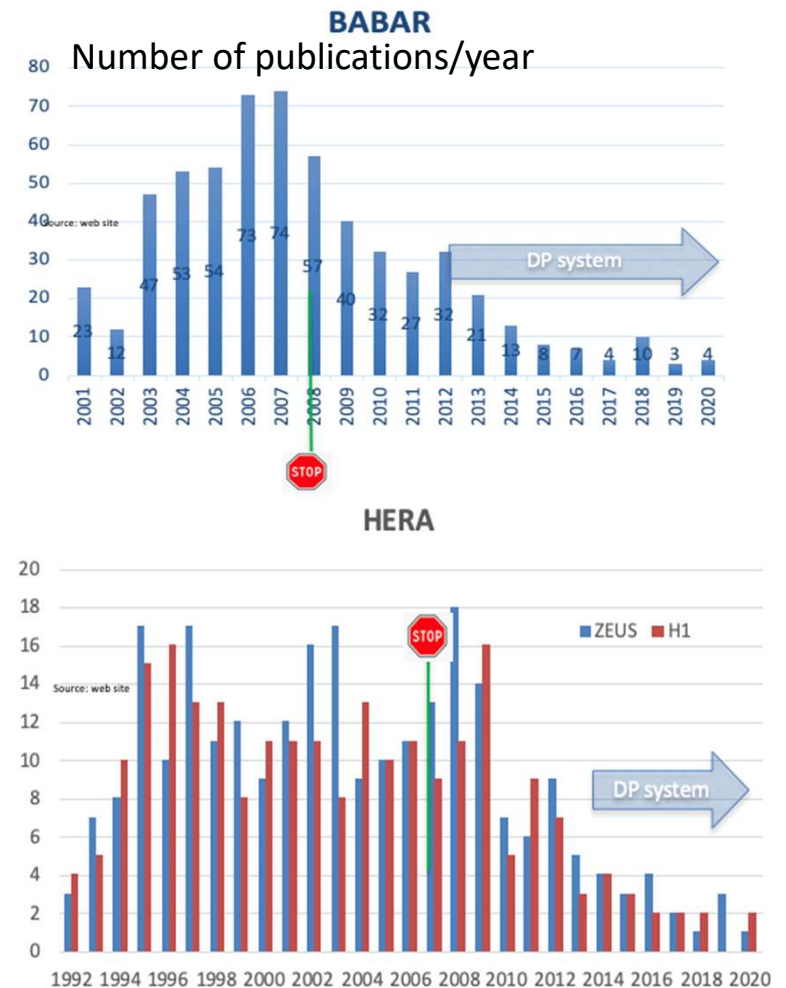
- *Enabling the science programs to meet their needs while accommodating other traffic serving the academia and research*

■ **Engagement**

- *With all of the experiments' computing managements, the major R&E network organizations, and advanced network R&D projects supporting major science programs*
- *Engage in persistent proof of concept, prototype, pre-production exercises and demonstrations*
- *To test and prove requirements, develop the new needed methods and tools and migrating them into production use*

Panel: Data Preservation in High Energy Physics DPHEP

- DPHEP as ICFA panel since 2009, International Collaboration since 2014
 - Provided a clear sign of the will of experiments, laboratories and funding agencies to collaborate in this common challenge: preserve, re-exploit and open HEP data
 - Activity: bi-annual workshops, global reports 2009, 2012, 2015, 2017, 2021 (in preparation)
- Members: about 60 scientists, representing experiments and laboratories
 - DPHEP Collaboration: CERN, DESY, HIP, IHEP, IN2P3, KEK, MPP, IPP/Canada, UK/STFC
 - DPHEP associated laboratories from US, Italy / represented in the Collaboration Board.
- The relevance of this action is now proven
 - Significant gain in the scientific return in the long term (10%) for a modest investment (<1%)
 - Laboratories/sites define policies towards preserved and open data
- **DPHEP Panel Objectives for 2021-2024:**
 - improve the awareness and stimulate improvements on DP
 - Scientific motivation, organisation, technologies, standards, outreach and education
 - Organise Workshops / issue Global Reports, ensure the link to other communities
 - reinforce and support the ongoing laboratory-based projects and their cooperation
 - keep alive data sets that (can) still produce science, keep track on parked data sets
 - support/develop the DP aspects for future experiments and encourage the ToK (ex. HERA → EIC, LEP/LHC → FCC)
 - encourage open data and open science as a way to preserve data and knowledge



Summary

- ILC International Development Team moving forward strongly
 - MEXT responding to Pre-lab proposal
- ICFA Seminar planned for March 2022
- ICFA Panels are very active
 - A number of chair and mandate updates, anticipate more

Thank you!

Contact

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