

Fermilab
**TESLA Technology
Collaboration Meeting**
December 5 - 8, 2023



TTC Scientific Program Committee
Detlef Reschke (DESY), SPC Co-Chair
Hiroshi Sakai (KEK), SPC Co-Chair
Eiji Kako (KEK), TTC Chair
Bob Laxdai (TRIUMF), Deputy TTC Chair
Sergey Belomestnykh (FNAL)
Grigory Ereemeev (FNAL), LOC Chair
Jie Gao (IHEP)
Catherine Madec (CEA)
Anne-Marie Valente-Feliciano (JLAB)
Hans Weise (DESY)
Akira Yamamoto (CERN/KEK)

TTC Local Organization Committee
Grigory Ereemeev (FNAL), LOC Chair
Daniel Bafia (FNAL)
Sergey Belomestnykh (FNAL)
Bianca Giaccone (FNAL)
Tammy Gloss (FNAL)
Evelynn Mendez (FNAL)
Christina O'Neal (FNAL)
Lezlee Ongena (FNAL)

<https://indico.fnal.gov/event/60446/>



Introduction talk in TTC-2023 Fermilab meeting

Eiji Kako (KEK, Japan)
TTC Chair

December 5th, 2023

Mission of the TESLA Technology Collaboration (1)

The mission of the TESLA Technology Collaboration is

- ◆ to advance SCRF technology R&D and related accelerator studies across the broad diversity of scientific applications.
- ◆ to keep open and provide a bridge for communication and sharing of ideas, developments, and testing across associated projects.

To this end,

- ◆ The TTC will support and encourage **free and open exchange of scientific and technical knowledge, expertise, engineering designs, and equipment.**

Mission of the TESLA Technology Collaboration (2)

- ◆ The TTC organizes regular collaboration meetings where **new developments are reported, recent findings are discussed, and technical issues concluded.**
- **Live presentation by in-person and face-to-face discussions** in a small room are our essential features in the TTC meeting. We should strictly maintain these special characteristics in the TTC meeting without any exception as a principal to be respected.

Completely in-person meeting



TESLA Technology
Collaboration meeting
at Aomori-city
2022
11-14 October
Link Station Hall Aomori
Aomori-city, JAPAN
<https://www.ttc2022.aomori-city.jp/>

hosted by QST Rokkasho Fusion Institute

TTC Meeting Scientific Program Committee:
Eiji Kako (KEK), TTC Chair
Katsura Kikuchi (QST), LOC Chair
Bob Laxdal (TRIUMF), Detlef Reschke (DESY)
Hiroyuki Sakai (KEK), Hans Woss (DESY)
Catherine Meade (CEA), Sergey Belostennykh (FNAL)
Camille Gotsberg (Jlab), Akira Yamamoto (CERN/KEK)
Gao Jie (IHEP)

Linear I/TF/TFTR-type Accelerator (LIPAC)
ITER-CEBA Project

TTC2022 at Aomori (114 participants)



Eiji Kako (KEK, Japan)

SRF2023 at Grand Rapids (300 participants)



TTC2023-Fermilab, 2023 December 5th



**SRF 2023
GRAND RAPIDS**

**21st International
Conference on
RF Superconductivity**

25-30 June 2023
AMWAY GRAND PLAZA HOTEL
Grand Rapids, Michigan, USA

SRF TOPICS

- Facilities
- Operational Experience and Lessons Learned
- Fundamental Research and Development
- SRF Technology
- Applications

ASSOCIATED EVENTS

- Pre-conference Tutorials (22-24 June 2023)
- Student Program
- FRIB Facility Tour

INTERNATIONAL PROGRAM COMMITTEE

Keiji Sakai, IHEP, IAC Chair & SRF23 Conference Chair
Chris Anderson, CEA Saclay
Hideo Nakamura, KEK
Walter Ventura Colosimo, CERN
Jian Qiang, ICL, IAC Vice Chair
Anna Sperlich, FNAL
Michael Kube, ANL

Jens Knobloch, ICFB
Robert Landa, Technical
Kazuo Ito, KEK
Kazuo Ito, KEK
Naruhiko Sakamoto, RIKEN & SRF23 Conference Chair
Toshiaki Tamai, KEK
Kiyoshi Umemoto, KEK

SCIENTIFIC PROGRAM ADVISORY BOARD

André Arnold, ICFB
Mehdi Arifan, Institut National de Physique Nucléaire
Sabine Bräse, RWTH Aachen
Zohar Denko, IHEP
Alberto Facco, INFN
Jin Song, IHEP
Yuan He, IHEP
Florian Hög, Johannes Gutenberg Universität Mainz
Jing-Jing Jia, IHEP
Wald Kater, LLNL
Robert Landa, Technical
Mehdi Arifan, Institut National de Physique Nucléaire - Saclay
Kazuo Ito, KEK
John Martinovic, CERN
Pavel Novitskiy, ICFB
Alexei Muzic, Uppsala University
Rafael Riquelme, ICFB
Hedger Prochold, Universität Frankfurt am Main
Mark Ross, SLAC
Shi Pu, Institut de Physique de Clermont, ICFB
Lixin Yin, SNMIP

LOCAL ORGANIZING COMMITTEE

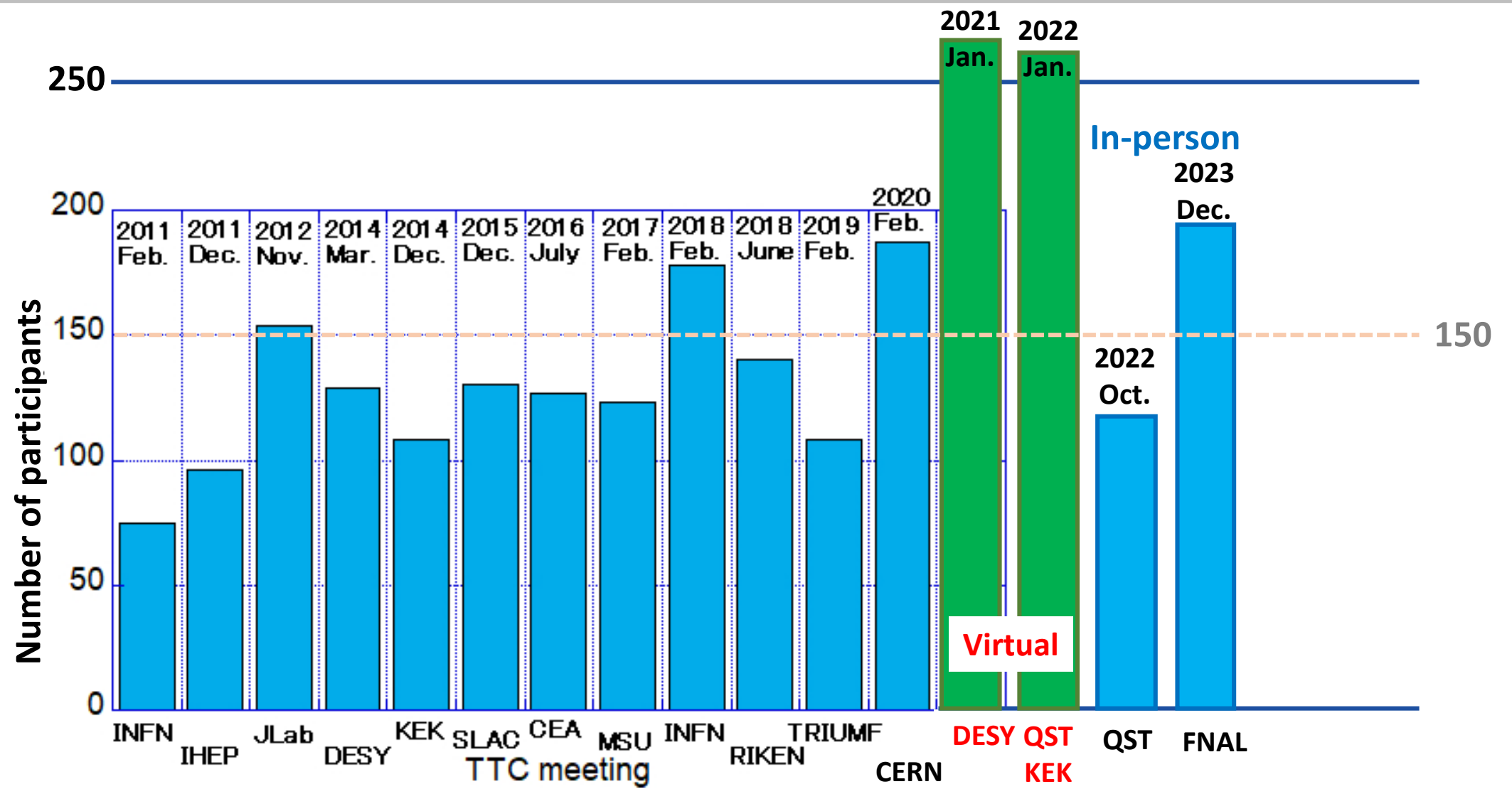
Ting Xu, LOC Chair • Zhongyuan Yao, Vice Chair • Chris Corrigan
Mehdi Arifan • Gao Jie • Gao Jie • Gao Jie • Gao Jie • Gao Jie
Alexander Flatau • Laura Poppezzini • Yoshitaka Yamazaki • Hao Yue

For more information
indico.frib.msu.edu/e/SRF23
srf23@frib.msu.edu

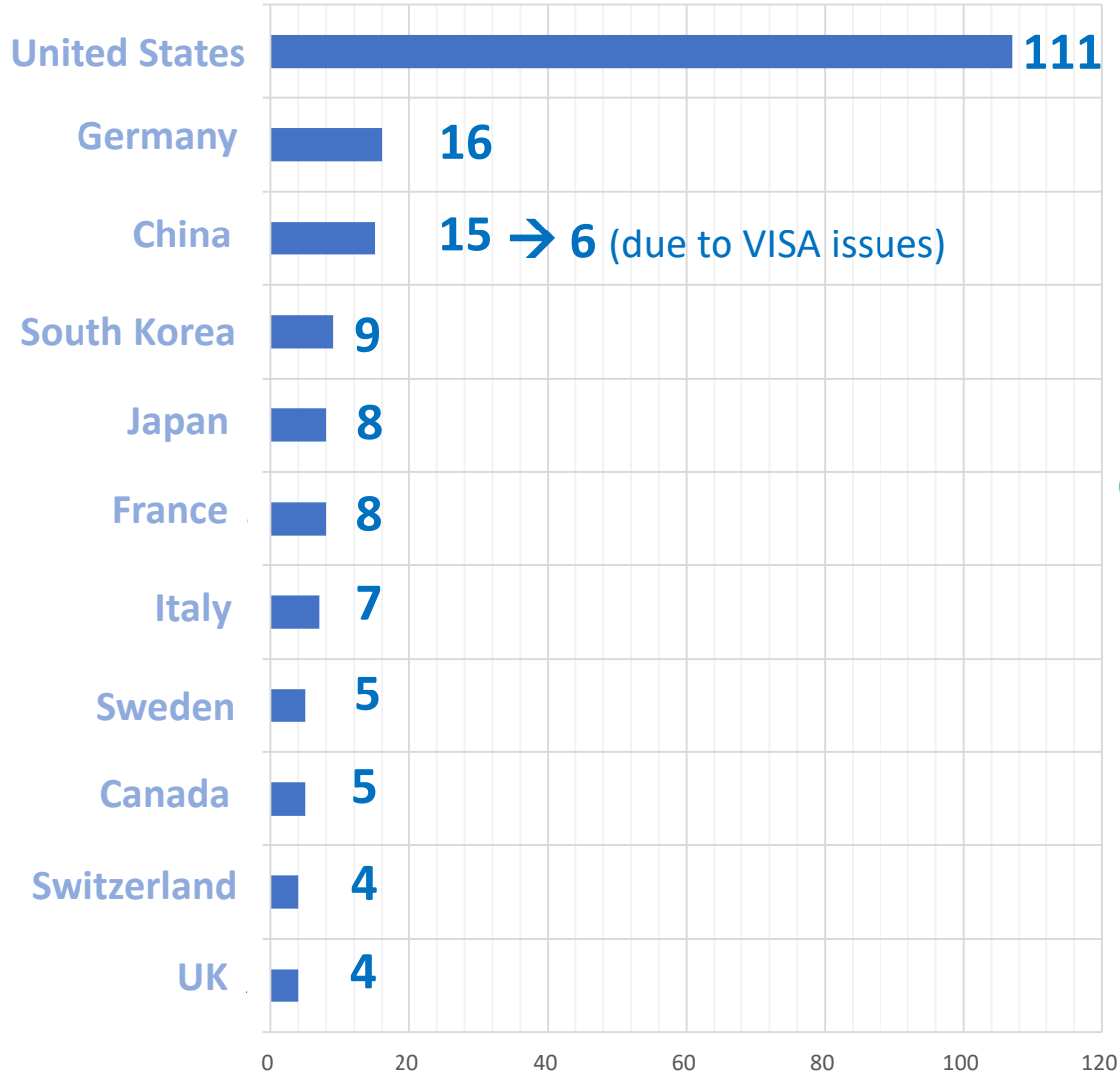




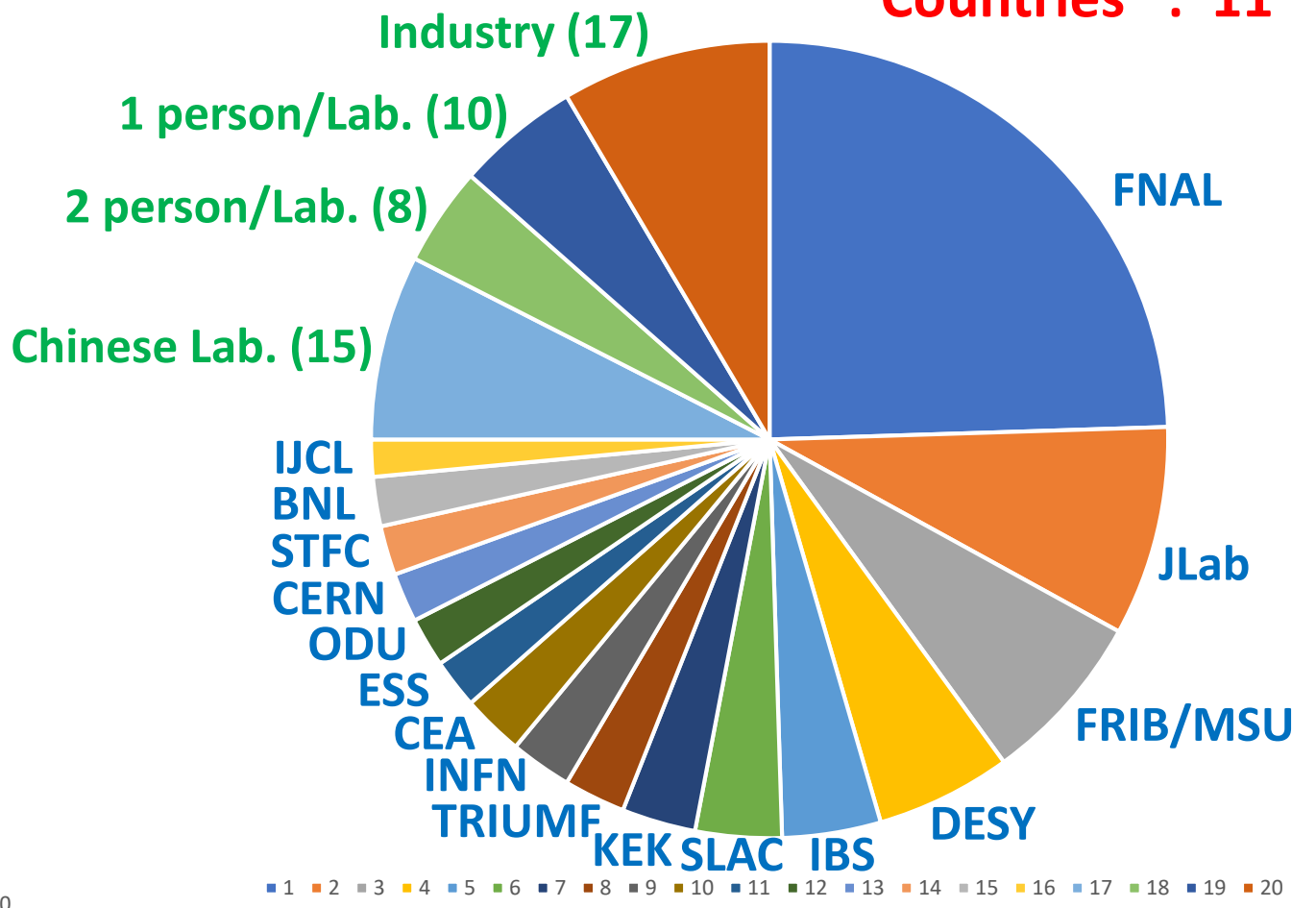
Number of participants in TTC



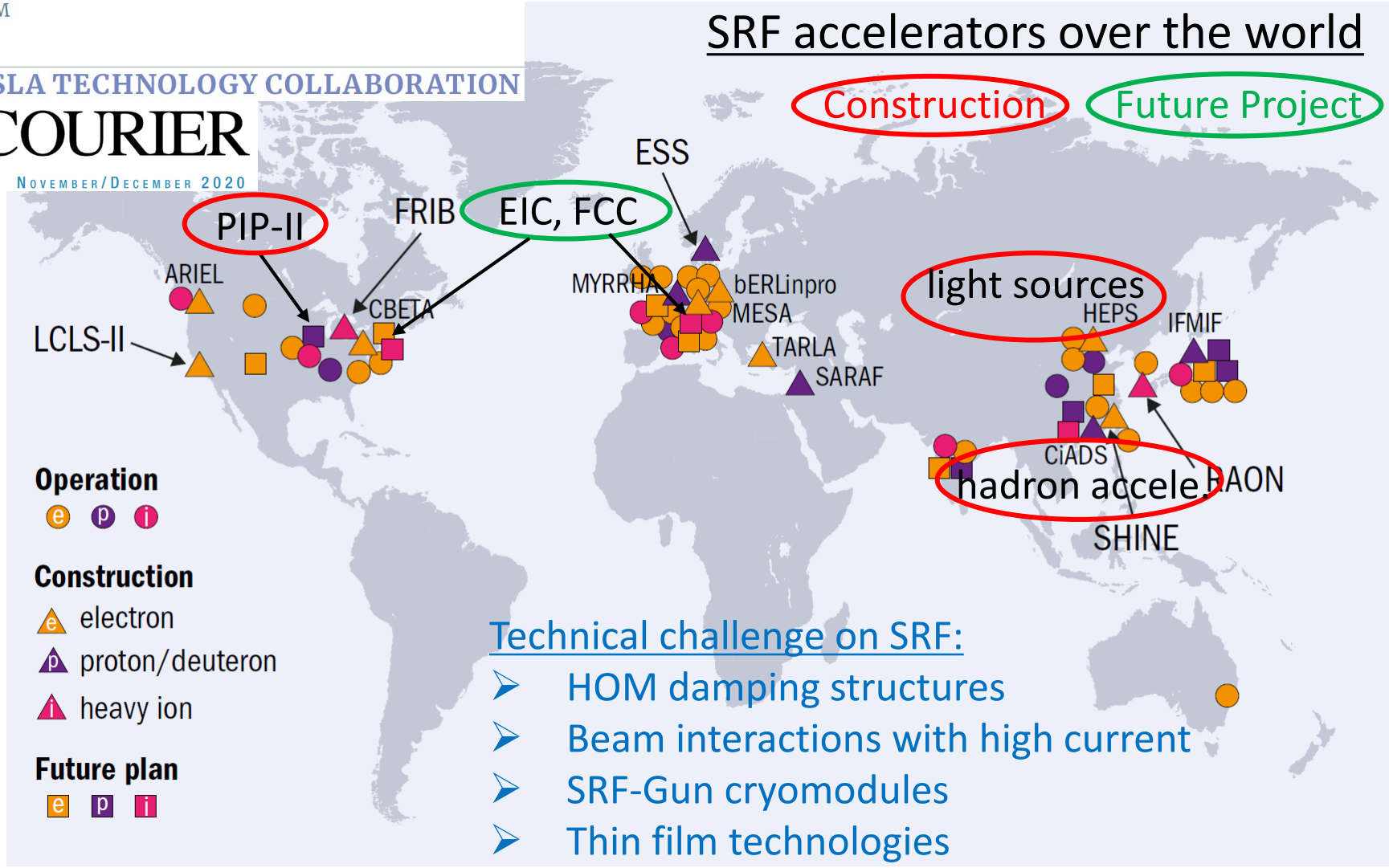
Participants in TTC-2023 Fermilab



Participants : 192
Countries : 11



SRF accelerators over the world



Construction (red oval)
Future Project (green oval)

Special Seminars:

- Science of FRIB
- Quantum computing

Hot topic discussion:

- Conduction cooled SRF cavity technologies

Technical challenge on SRF:

- HOM damping structures
- Beam interactions with high current
- SRF-Gun cryomodules
- Thin film technologies

Discussion on Working Groups

WG-1: Progress on High Q and High Gradient activities.

Daniel Bafia (FNAL), Akira Miziyaki (IJCLab), Jinfang Chen (SARI)/Detlef Reschke (DESY)

WG-2: Developments and experiences with emerging TEM- and TE-mode cavities: Spoke resonators and Crab cavities.

Jun Tamura (JAEA), Suba De Silva (ODU), David Longuevergne (IJCLab)

WG-3: Novel clean assembly techniques, in-situ mitigation, and recovery processes.

Naruhiko Sakamoto (RIKEN), Martina Martinello (SLAC), Enrico Cenni (CEA)

WG-4: Design, experience, and operation with high-beta/beta=1 cryomodules and sub-components.

Han Li (IASF), Serena Barbanotti (DESY), Dan Gonella (SLAC)

Hot topic discussion: Challenges for conduction-cooled SRF cavity technology

Akira Yamamoto (KEK), Gianluigi Ciovati (JLab), Jens Knobloch (HZB)

More than 10 colleagues from China cancelled the participation of this TTC meeting due to VISA issues: **delay of receipt or late interview.**

■ WG discussions:

To maintain **live presentation** by in-person and **face-to-face discussions** in a small room:

→ **Presentation of back-up speakers in WG talks was decided.**

→ Total 8 WG talks by back-up speakers and one cancellation were determined.

■ Plenary talks:

Permission of the remote presentations of two plenary talks from China was decided as special exceptional cases due to unavoidable circumstances.

→ **Two talks would be preferable to be presented in the same plenary session in the first day.**

9:30	Recent Status of SRF Projects for Hadron Accelerators in China Remote presentation	Yuan He (Institute of Modern Physics)	09:00 - 09:30
10:00	Overview of SRF projects for Synchrotron Light Sources in China Remote presentation	Jiyuan Zhai (IHEP)	10:00 - 10:30
10:30			

→ Pei Zhang (IHEP)

TTC-CB in-person meeting on June 27th during SRF2023

30 Participants:

Eiji Kako (Chairman, KEK),
Bob Laxdal (meeting notes, TRIUMF),
Philippe Goudek (ESS), Henry Przybilski (ESS),
Kondo Yasuhiro (JAEA), Hiroshi Sakai (KEK),
Yeonseung Chung (IBS/RISP), Taeksu Shin (IBS/RISP),
Jens Knobloch (HZB), Marc Wenskat (U. Hamburg),
Timo Stengler (U. Mainz/MESA),
Walter Venturini Delsolaro (CERN),
Ting Xu (FRIB/MSU), Naruhiko Sakamoto (RIKEN),
Jinfang Chen (SARI), Carlo Pagani (INFN Milano),
John Mammoser (SNS), Oliver Piquet (CEA),
Anne Marie Valente-Feliciano (JLab),
Peter McIntosh (STFC), Christian Pira (INFN LNL),
Weiming Yue (IASF), Zack Conway (BNL),
Matthias Liepe (Cornell), Dan Gonnella (SLAC),
Roger Ruber (Uppsala University),
Detlef Reschke (DESY), Sergey Belomestnikh (FNAL),
Takashi Ebisawa (QST), Rongli Geng (JLab)

TTC Collaboration Board Meeting in SRF2023 at Grand Rapids

2023, June 27th, 14:00 ~

Eiji Kako (KEK), TTC chair
Bob Laxdal (TRIUMF), TTC deputy chair

Agenda of meeting

1. Report of TTC Collaboration Board members
2. Report of TTC Executive Committee
3. Report of TTC WG Activities
4. Preparation status of the next TTC meeting
5. Proposal of the future TTC meeting
6. Others

TTC statement and action against Russian government's invasion of Ukraine

We condemn the military aggression by the Russian government against Ukraine and express our deep dismay at this unacceptable cruel behavior and our grave concerns about its impact. Such tragic events should never happen in the world. Our thoughts go to all the people suffering from the invasion of Ukraine, and to them we extend our deepest sympathy and support in this difficult time. As a peaceful, non-political scientific collaboration we stress the need for this war to end and ask all our TTC colleagues to support the peaceful resolution of the crisis.

While we continue to support the global scientific exchange between SRF technology experts and teams, due to the severity of the situation **we are suspending participation of Russian institutes in TTC sponsored events and collaborations, until further notice.**

[DESY TTC Home-page](https://tesla.desy.de/collaboration_members/)

https://tesla.desy.de/collaboration_members/

March 11th, 2022

Eiji Kako, Bob Laxdal, Hans Weise, Paolo Pierini, Sergey Belomestnykh,
and Akira Yamamoto (TTC Chairs and Executive Committee members).

We should maintain our TTC statement and action.

TTC Executive Committee	
TTC chair	Eiji Kako (KEK)
TTC deputy	Bob Laxdal (TRIUMF)
Regional representative (Europe)	Hans Weise (DESY) Catherine Madec (CEA)
Regional representative (North America)	Sergey Belomestnykh (FNAL) Anne-Marie Valente (Jlab)
Regional representative (Asia)	Akira Yamamoto (KEK) Gao Jie (IHEP)
TTC Technical Board	
TTC-TB chair	Detlef Reschke (DESY)
TTC-TB deputy	Hiroshi Sakai (KEK)

The EC members will attend the CB and TB meetings, as observers.

Co-chairs

D. Reschke (DESY)
H. Sakai (KEK)

Improvements:

- Gender balance
- Laboratory balance
- Age balance

Cavity and couplers

S. Calatroni (CERN)
R.L. Geng (ORNL)
J. Hao (PKU)
A. Romanenko (FNAL)
K. Umemori (KEK)
J.Y. Zhai (IHEP)
D. Longuevergne (IJCLab)
Z. Conway (BNL)
N. Sakamoto (RIKEN)
L. Monaco (INFN Milano)
L. Popielarski (FRIB)
M. Martinello (SLAC)
P. Dhakal (Jlab)

RF and tuning

F. Gerigk (CERN)
A. Wheelhouse (STFC)
C. Hovater (JLab)

Cryomodule and cryogenics

S. Aderhold (SLAC)
T. Arkan (FNAL)
S. Barbanotti (DESY)
J. Mammosser (ORNL)
A. Neumann (HZB)
H. Li (IASF)

Integration and operation

M. Liepe (Cornell)
E. Harms (FNAL)
J. Branlard (DESY)
M. Nishiwaki (KEK)

Total members = 28
(EU=9, NA=12, Asia=7)
Gender balance: 6/28 = 21%

These members will be maintained during the period of the current TTC chair.

● Chairs of TTC High-Q/High-G Working Group:

- Martina Martinello (SLAC)
- Kensei Umemori (KEK)
- Akira Miyazaki (Uppsala U)

→→→ Summary talk in WG-1

[TTC High-Q/High-G WG remote meeting was held on Sept. 7th, 2023.](#)

● Chairs of TTC Thin Film Working Group:

- Marc Wenskat (U. Hamburg)
- Sebastian Keckert (HZB)

→→→ Plenary talk by A-M. Valente

at TTC meeting:
Please enjoy insight discussions in WGs
on cutting-edge SRF technologies.

Thank you for your attention!