

TESLA TECHNOLOGY
TTC
COLLABORATION

QST

TESLA Technology
Collaboration meeting
at Aomori-city
2022

hosted by QST Rokkasho Fusion Institute

TTC Meeting Scientific Program Committee:
Eiji Kako (KEK), TTC Chair
Keitaro Kondo (QST), LOC Chair
Bob Laxdal (TRIUMF), Detlef Reschke (DESY),
Hiroshi Sakai (KEK), Hans Weise (DESY)
Catherine Madec (CEA), Sergey Belomestnykh (FNAL)
Camille Ginsburg (Jlab), Akira Yamamoto (CERN/KEK)
Gao Jie (IHEP)

11-14 October
Link Station Hall Aomori
Aomori-city, JAPAN
<https://www.ttc2022aomori.org>

Linear IFMIF Prototype Accelerator (LIPAC)
© IFMIF/EVEDA Project



Report of TTC-CB meeting in TTC2022-Aomori

Eiji Kako (KEK), TTC Chair
Bob Laxdal (TRIUMF), TTC Deputy Chair

October 14th, 2022

Thank you for your participation and fruitful discussions!





Agenda



1. Confirmation of maintaining TTC statement and action
2. Presentations for new TTC-CB membership:
 - JAEA/J-PARC, Japan
 - IASF/DALS&S3FEL, China
3. Location and date of the next TTC in-person meeting:
in USA → Europe → Asia
4. Others



TTC statement and action



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

Dear TTC collaborators,

Since the situation has not been drastically improved, our TTC statement and action should be maintained.

Further to our statement of March 8th we append the action shown below.

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.**

March 11th, 2022

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

Approved by CB



New TTC-CB membership



Presentations for a new TTC-CB membership

- Japan Atomic Energy Agency (JAEA):
J-PARC project,
by **Yasuhiro Kondo (Tokai, Japan)**
- Institute of Advanced Science Facility (IASF):
Dalian Advanced Light Source (DALIS) and
Shenzhen Superconducting Soft X-ray FEL (S3FEL),
by **Han Li (Shenzhen, China)**

Approved by CB

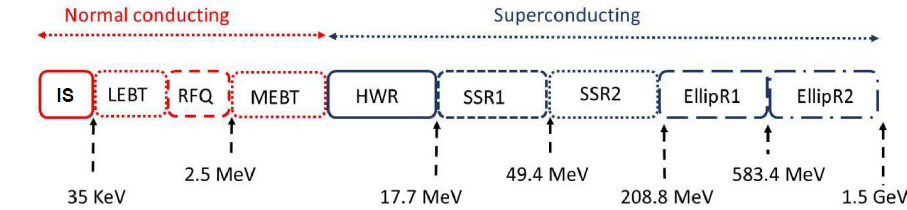
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SRF activities in JAEA (Japan)



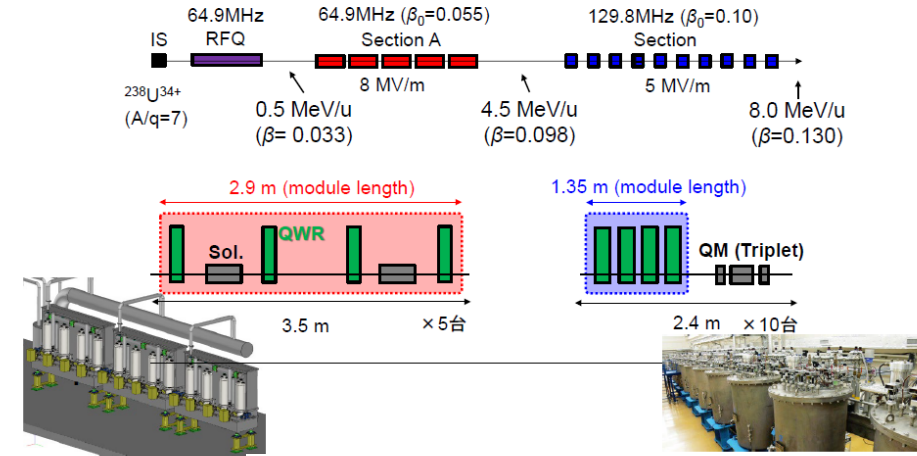
Overview of the JAEA-ADS linac



Frequency [MHz]		162		324		648	
Parameters for JAEA ADS linac							
Energy (GeV)	1.5						
Current (mA)	20						
Duty (%)	100 (CW)						
Power (MW)	30						
		HWR	SSR1	SSR2	EllipR1	EllipR2	
Frequency (MHz)		162	324		648		
β_g		0.08	0.16	0.43	0.68	0.89	
Eacc (MV/m)		7	7	8	14	14	

2022/10/11

Detail plan of the Tandem successor



2022/10/11

Current status



- Fabrication of cavity body has been finished.

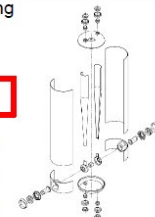
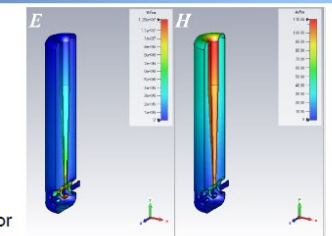
Tue 11/10	Wed 12/10	All days
11:00	Test results of electro-polishing for quarter-wave resonators Small meeting room 4, Link Station Hall Aomori	KIKUSEI Nat
11:00	Troubleshooting during high pressure rinsing of superconducting solenoid packages for LIPAC Small meeting room 4, Link Station Hall Aomori	Takashi Ebisawa
11:00	Fabrication Status of the Prototype Spoke Cavity for the JAEA-ADS Linac Small meeting room 4, Link Station Hall Aomori	Jun Tamura
12:00	LIPAC cryomodule assembly progress and lessons learnt Small meeting room 4, Link Station Hall Aomori	Jensie Chen
12:00	Discussion Small meeting room 4, Link Station Hall Aomori	

Current activities



EP studies prepare for degradation of existing cavities

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Design work of new 65-MHz QWR collaboration with RIKEN and KEK

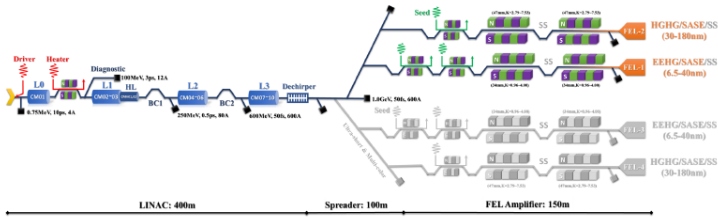
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SRF activities in IASF (China)



Dalian advanced light source (DALs)

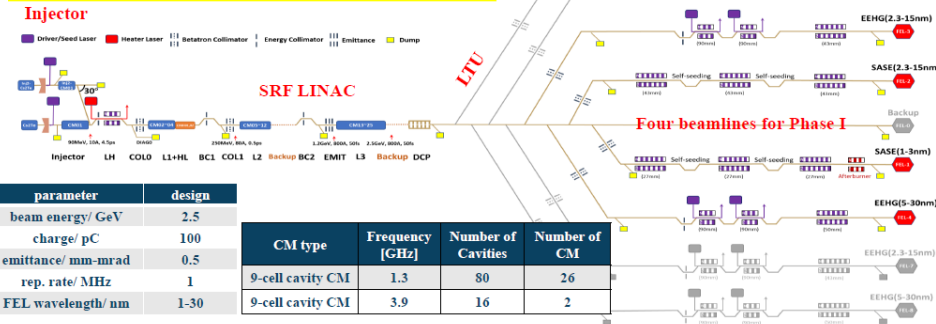


Parameter	design
beam energy/ GeV	1
charge/ pC	100
emittance/ mm-mrad	0.5
rep. rate/ MHz	1

CM type	Frequency [GHz]	Number of Cavities	Number of CM
9-cell cavity CM	1.3	80	10
9-cell cavity CM	3.9	16	2

Shenzhen Superconducting Soft-X-Ray Free Electron Laser (S³FEL)

We are the same team!
All resources and personal from DALs will be duplicated/transferred for S³FEL project



parameter	design
beam energy/ GeV	2.5
charge/ pC	100
emittance/ mm-mrad	0.5
rep. rate/ MHz	1
FEL wavelength/ nm	1-30

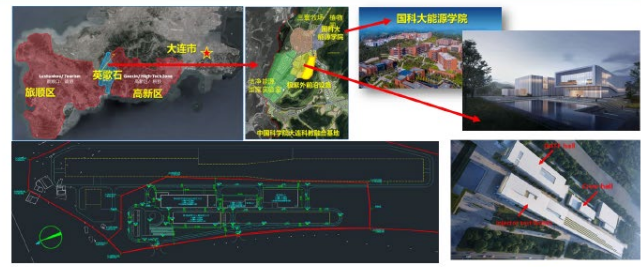
CM type	Frequency [GHz]	Number of Cavities	Number of CM
9-cell cavity CM	1.3	80	26
9-cell cavity CM	3.9	16	2

There is no soft X-ray FEL facility operating at MHz repetition rate in the world

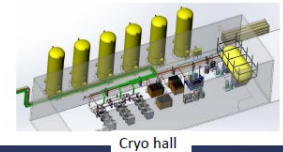
深圳综合粒子设施研究院
Institute of Advanced Science Facilities, Shenzhen

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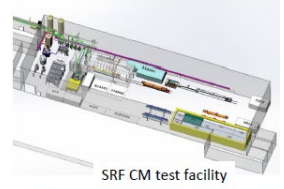
Dalian advanced light source (DALs)



- DALs R&D project launch on 2021/9/22
- 1 × injector test facility
- 1 × SRF CM test facility
- Cryoplat with 370 W@2 K
- <http://cryo.dicp.ac.cn/>



Start from 2021/9/22



SRF CM test facility

Current situation

Construction of the first building (office) for S³FEL is done in 09/2022.
Civil engineering construction for Linac will be started soon.





Locations of next TTC meeting



Location and date of the next TTC in-person meeting:

- Region: North America
- Preferable date: **early December 2023'**
- Proposal of host laboratory:
 - FNAL by Sergey Belomestnykh
 - ~~Any others?~~

Approved by CB



Locations of future TTC meeting



Location and date of subsequent future TTC in-person meeting:

- Region: Europe
- Preferable date: **June/July 2024'**
- Proposal of host laboratory:
 - **ESS at Lund by Paolo Pierini**, any other proposals?

Location and date of subsequent future TTC in-person meeting:

- Region: Asia
- Preferable date: **early December 2024'**
- Proposal of host laboratory:
 - any proposals?



Others



◆ New co-chairs of TTC High-Q/High-G Working Group

Co-chairs of TTC High-Q/High-G WG;

- Martina Martinello (SLAC) : North America
- Kensei Umemori (KEK) : Asia
- Akira Miyazaki (Uppsala U.) : Europe, a new co-chair



Approved by CB



Others



- ◆ TTC chair would like to hold a regular TTC Executive Committee remote meeting every one/two months.
- ◆ The next TTC Collaboration Board meeting will be held during SRF2023 at MSU, (June 2023'), if necessary. (Attendance by a representative of your laboratory will be permitted, if your participation is not available.)

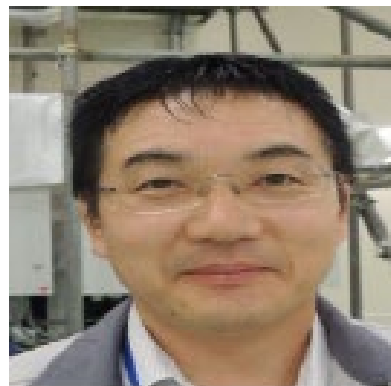
Special thanks to Local Organization Committee of QST:



Kondo-san



Hasegawa-san



Kasugai-san



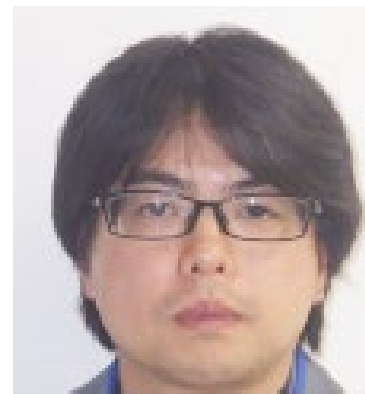
Masuda-san



Yoshida-san



Kumagai-san



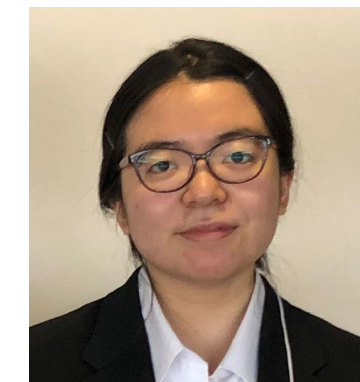
Akagi-san



Hirosawa-san



Ebisawa-san



Takeishi-san



See you in the next TTC in-person meeting
at **FNAL** in Chicago, early **December 2023'**





Thank you for your attention!