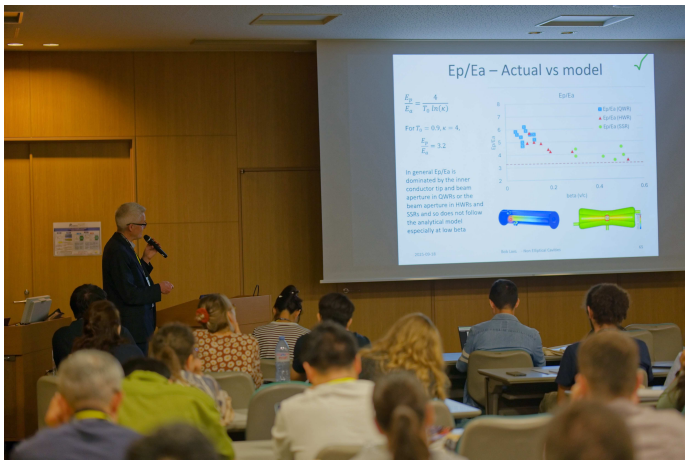





Ep/Ea – Actual vs model


Electron Beam Welding


Working in a cleanroom
Wet-clean
Dry clean

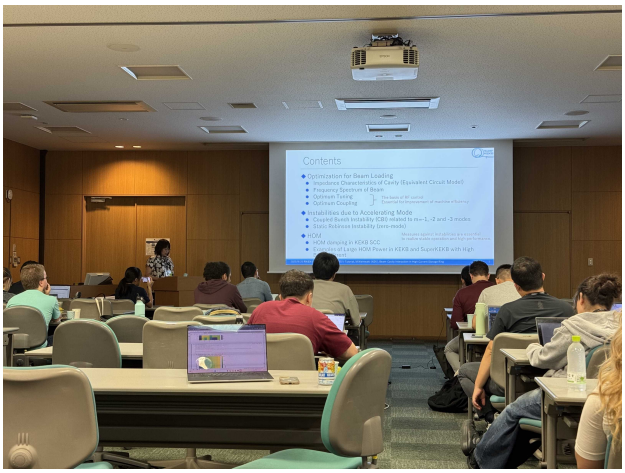

Outline
How-to and lessons learned
Cleanroom Assembly
Cavity Testing


Further Optimizing the Mid-T Bake and Understanding the Origins of Quench


90:00



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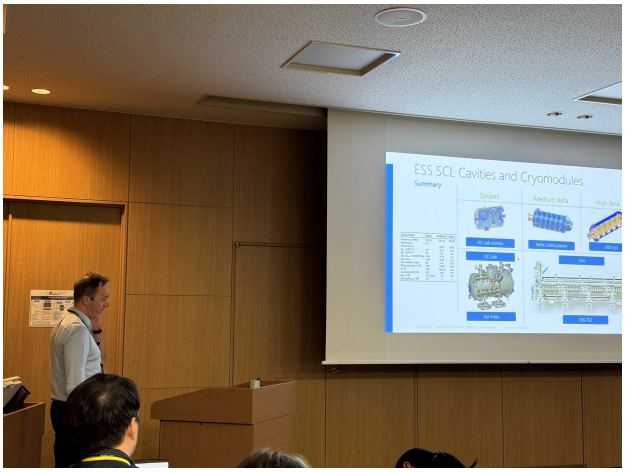
ESS SCL Cavities and Cryomodules
Summary
Spokes
Medium Beta


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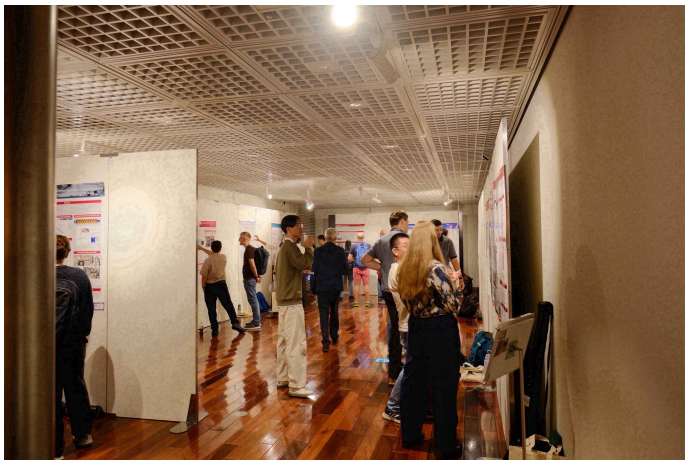



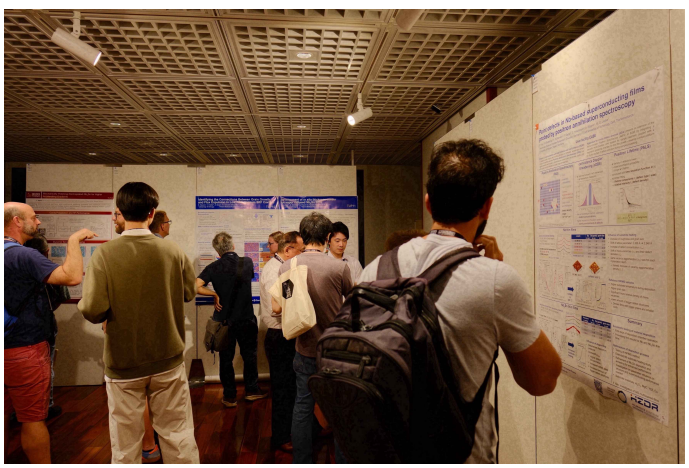



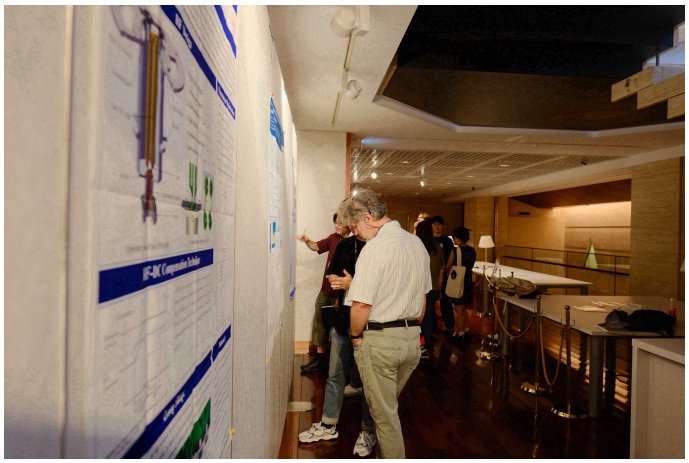










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RED: Some critical problems found.
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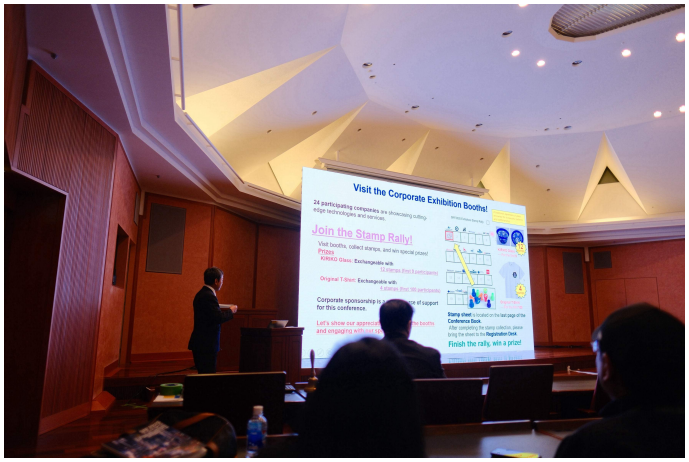
If you have any problems, please come to proceedings office at B1F.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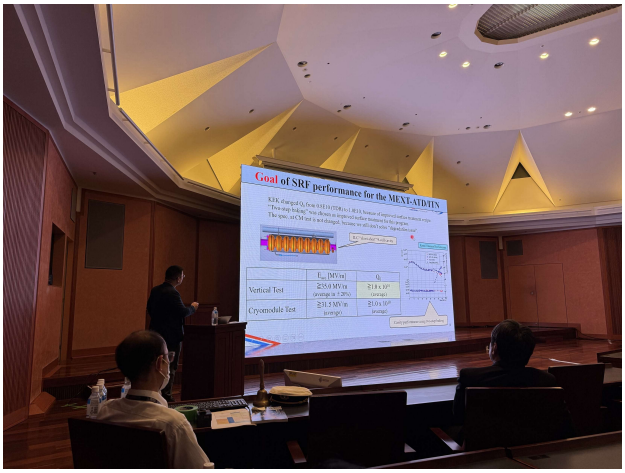
Finish the rally, win a prize!


FUNDAMENTAL POWER COUPLER




Goal of SRF performance for the MEXT-ATD/TIN
Vertical Test
Cryomodule Test
















Questions
IPAC







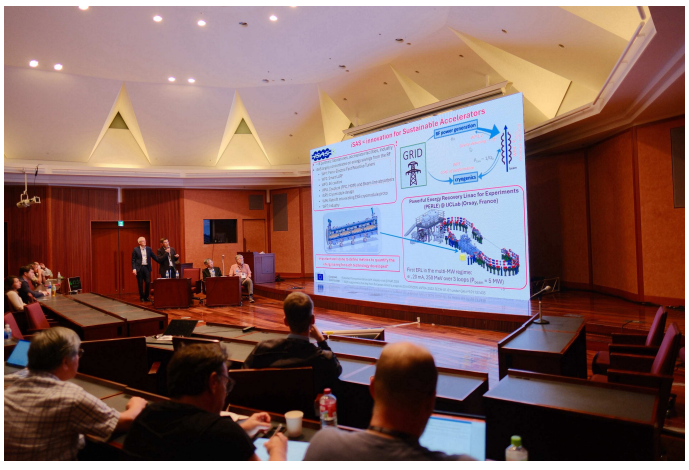






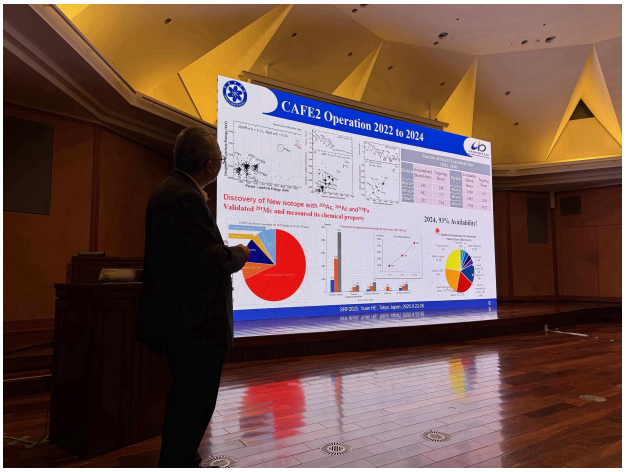

Sustainability in accelerators: a growing momentum


Sustainability in accelerators: a growing momentum


ISAS innovations for Sustainable Accelerators
GRID






CAFE2 Operation 2022 to 2024
Discovery of New isotope with 208Ac, 206Ac and 208Fr
Validated 208Mc and measured its chemical property
2024, 93% Availability!


Towards small SRF accelerator
Demands for the cooling system must be easy operation and small footprint, etc...
Also, high pressure gas safety associated with the use of liquid helium is another obstacle.
Now, Nb3Sn cavities are attracting worldwide attention.
The high Tc of the Nb3Sn cavity allows high Q-values at 4.2 K resulting low RF heating.
With 1 cell 1.3 GHz cavity, Q0 10^10 at Eacc 10 MV/m → 1W at 4.2 K
A commercial 4K cryocooler has a few watts of cooling capacity at 4.2 K.
Nb3Sn cavity + 4K cryocooler = Game changer
Main two challenges are
Nb3Sn cavity fabrication (coating),
thermal conduction cooling technique.





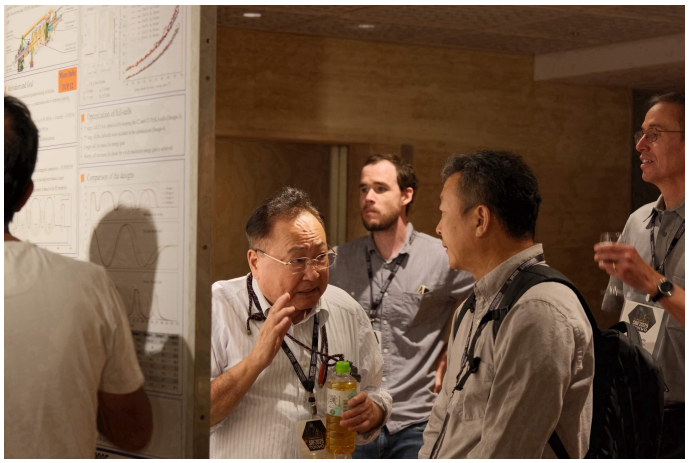








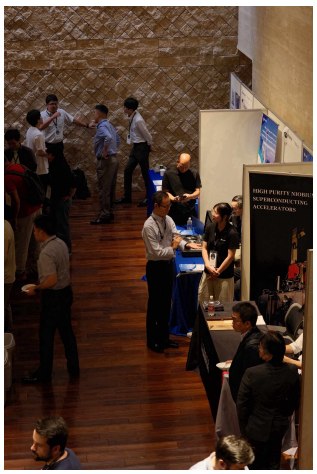





Plasma Electrolytic Polishing
PLASMA PROCESSING OF LOW BETA SRF ELLIPTICAL CAVITIES





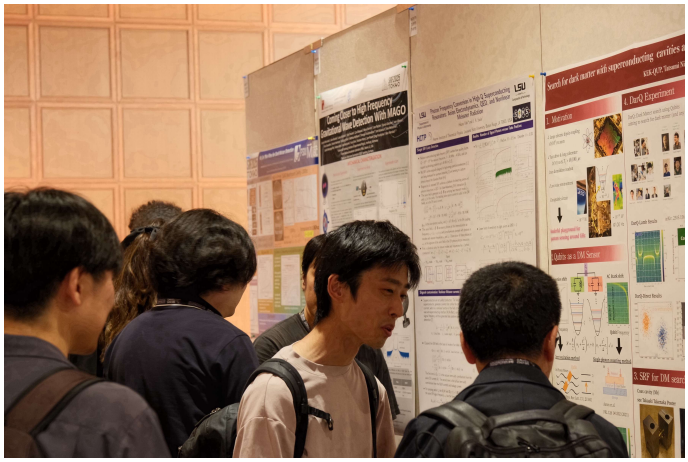





Superconducting the Future







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Hot topic 2
Development toward extremely high
performance superconducting cavities


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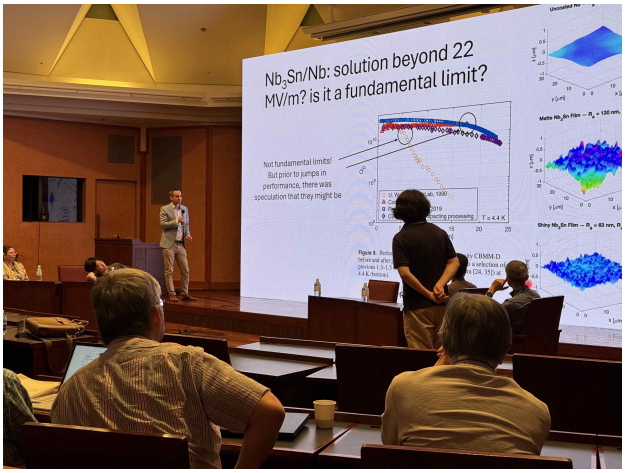
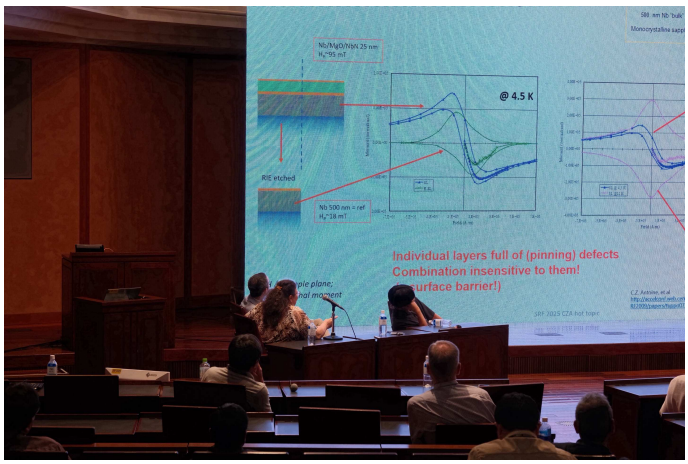
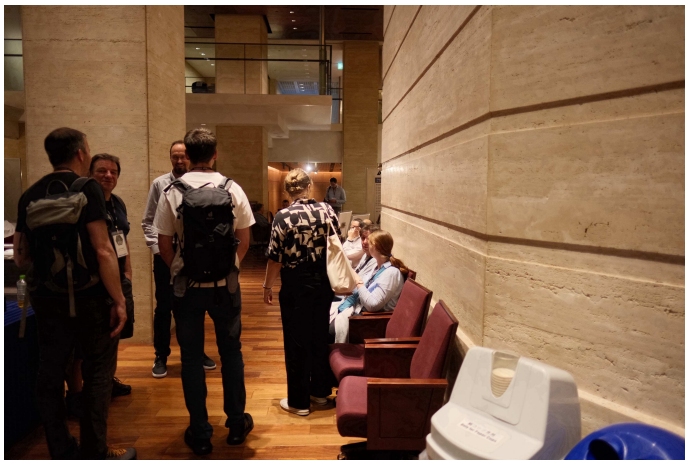

Nb3Sn/Nb: solution beyond 22
MV/m? is it a fundamental limit?


Fermilab




@ 4.5 K
RIE etched
Individual layers full of (pinning) defects
Combination insensitive to them!
urface barrier!)





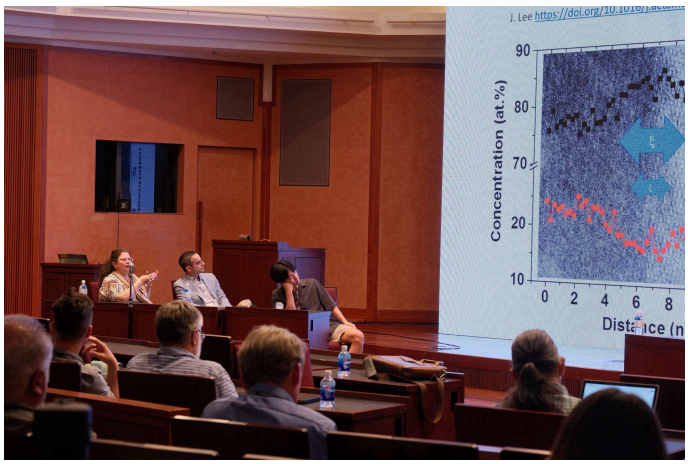


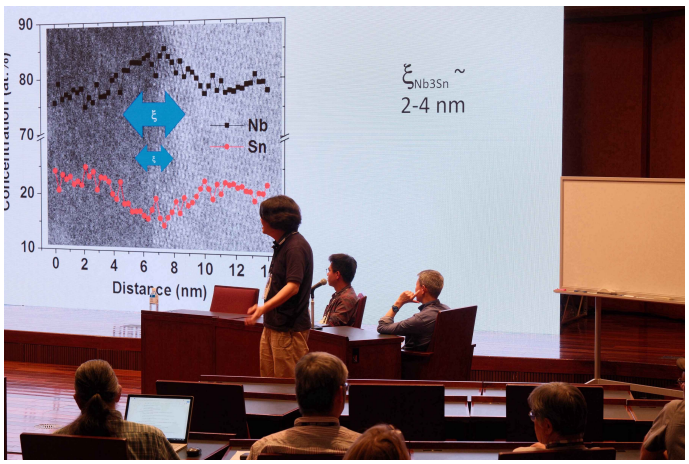


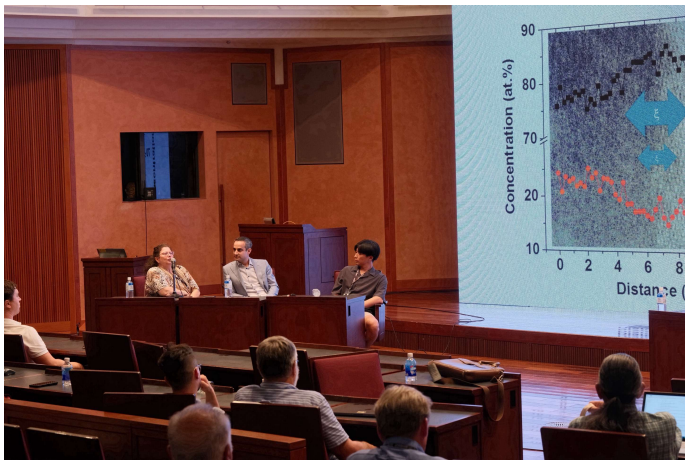


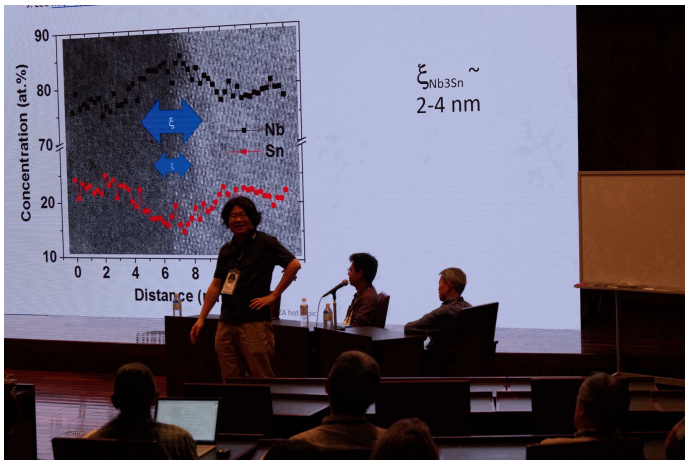

Nb3SnThick film vs SIS @ 4.5 K

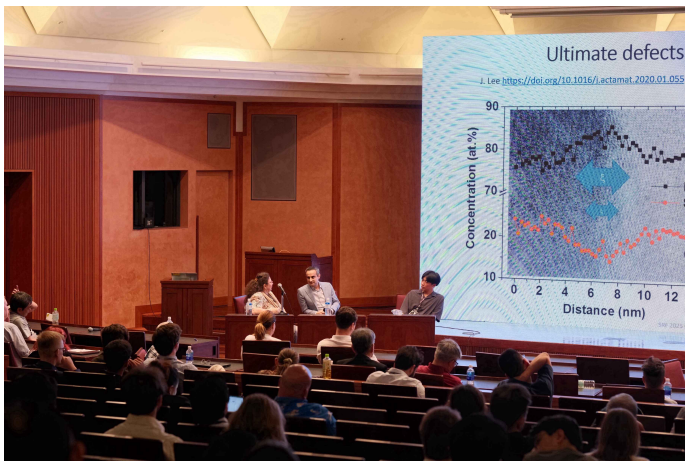


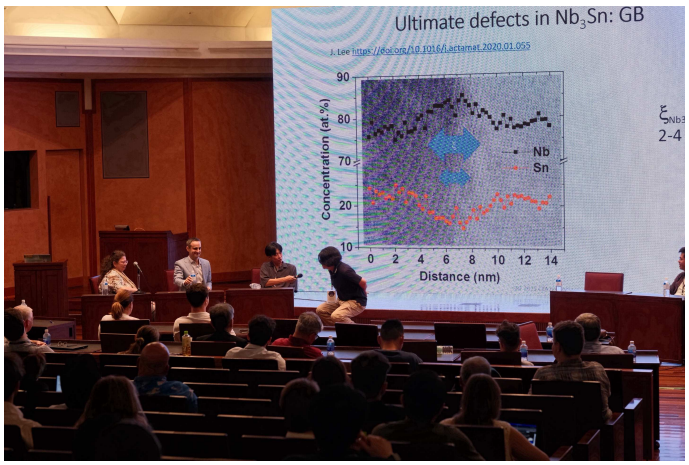

Concentration (at.%)
Distance (nm)


Nb
Sn
Distance (nm)

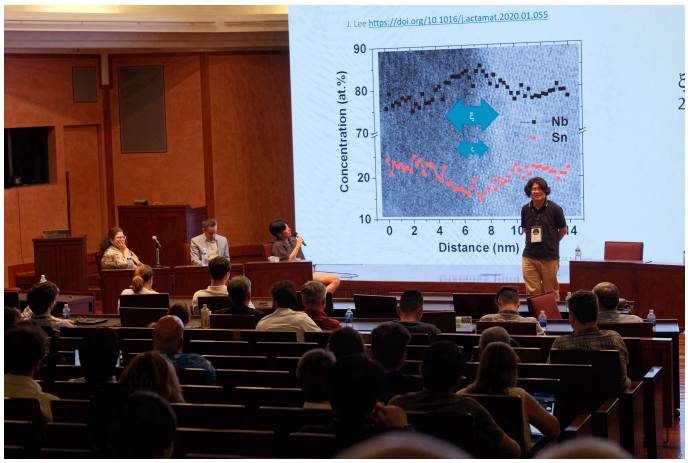

Concentration (at.%)


Concentration (at.%)
Nb
Sn


Ultimate defects
Concentration (at.%)
Distance (nm)


Ultimate defects in Nb3Sn: GB
Concentration (at.%)
Nb
Sn
Distance (nm)

September 23rd (6 / 6)




















Tube Hydroforming
Principle of hydroforming
Automobile parts
Hydraulic parts
Flexible tubes
Hollow frame parts


Tube Hydroforming


Introduction
SRF2025
EIZO








SYMPHONY









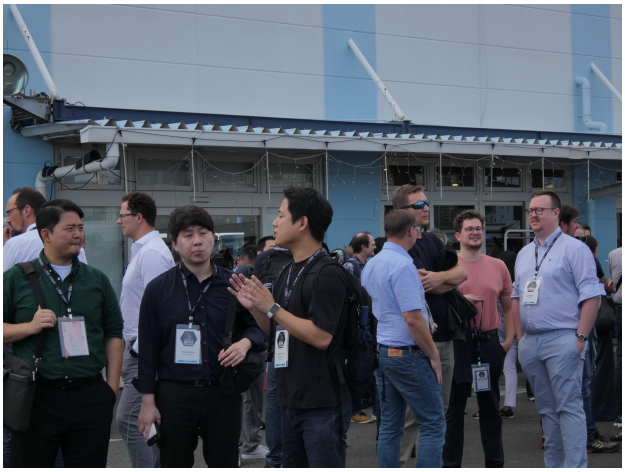



INTER-CONTINENTAL
















SINGAPORE

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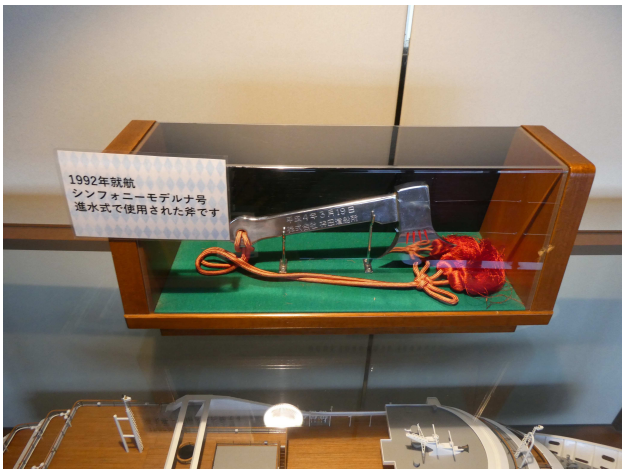
1992年就航
シンフォニーモデルナ号
進水式で使用された斧です































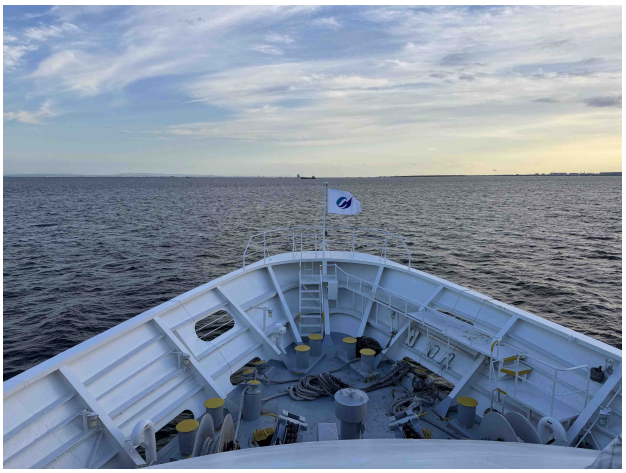



















































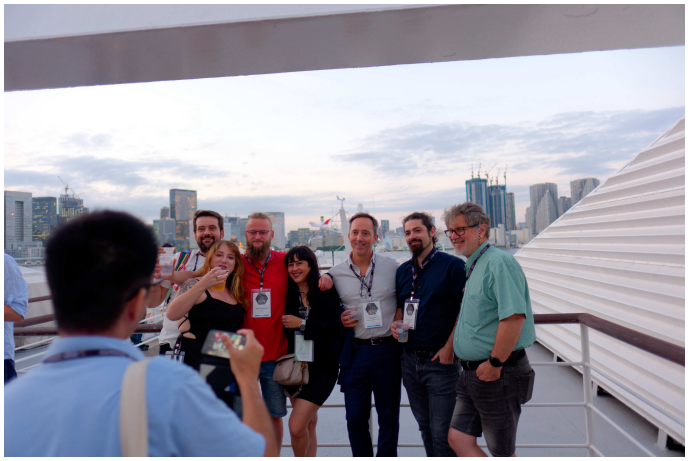





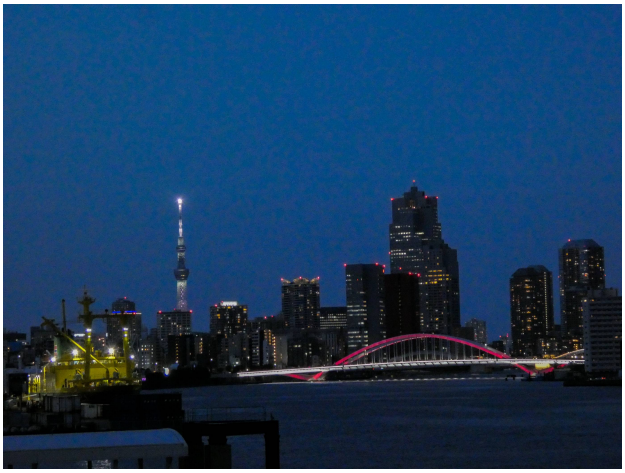










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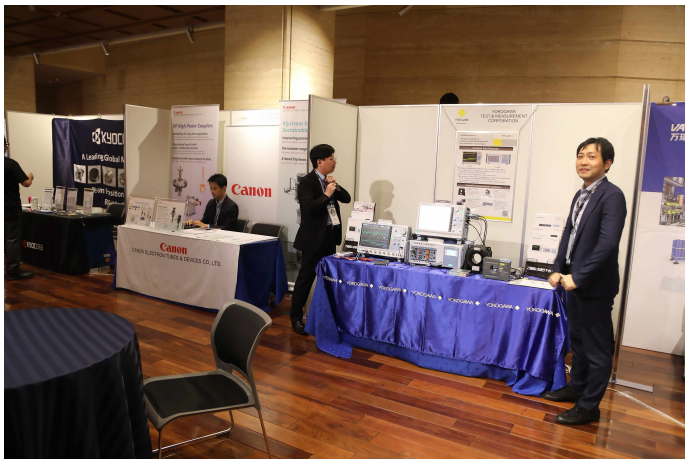

Canon
Canon

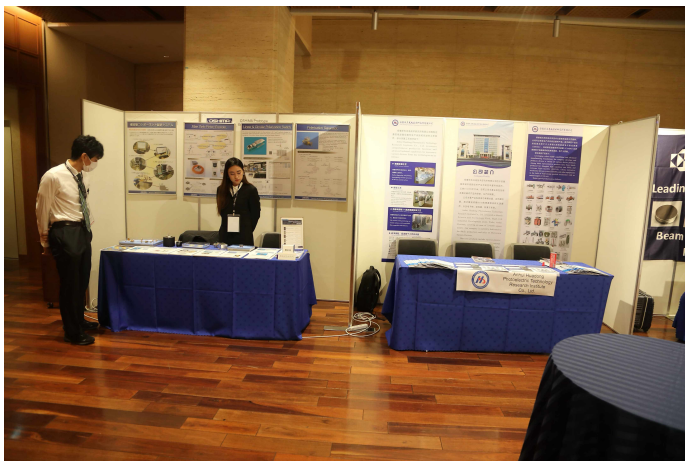



RF GENERATORS
THAMWAY


research instruments


POWER
Semi-solid
990g
16mm slim
research instruments


KATSWIRE ADVANCED TECHNOLOGY
KAT
KATSWIRE
K A T
Superconducting the Future

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A Leading Global Manu
Beam Position
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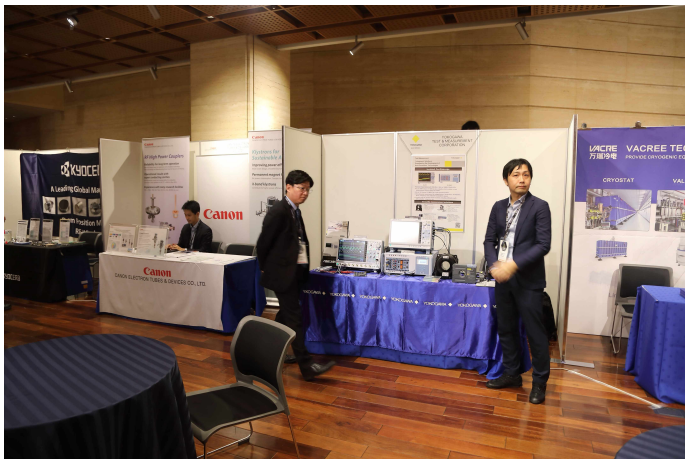
Canon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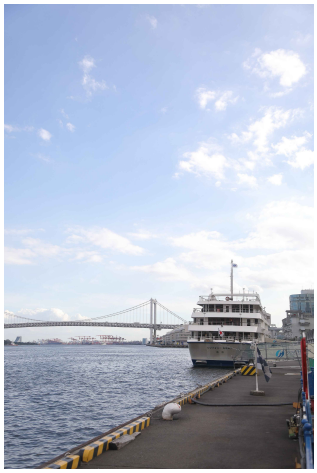
SYMPHONY


SYMPHONY CLASSICA







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TOKYO BAY CRUISE


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TOKYO BAY CRUISE































































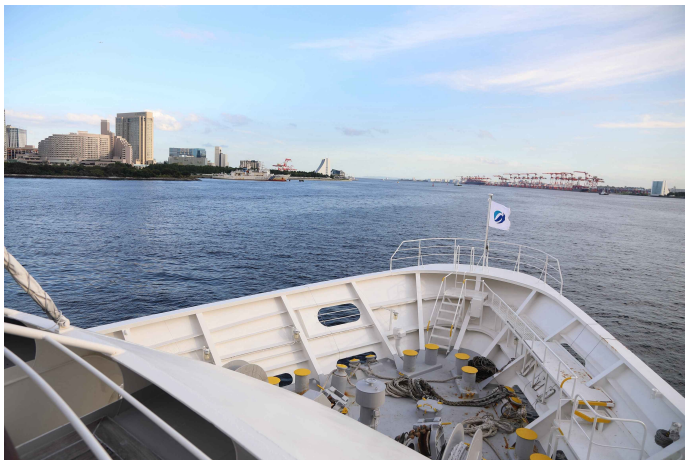






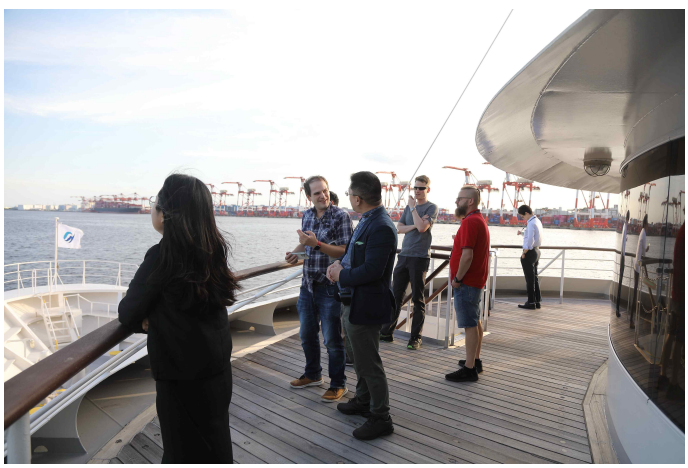






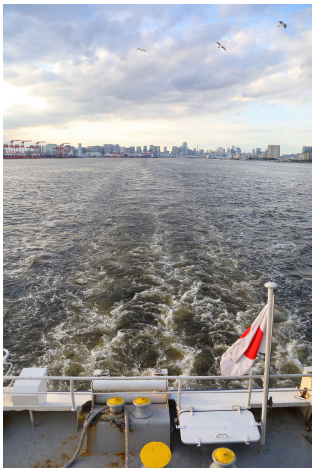


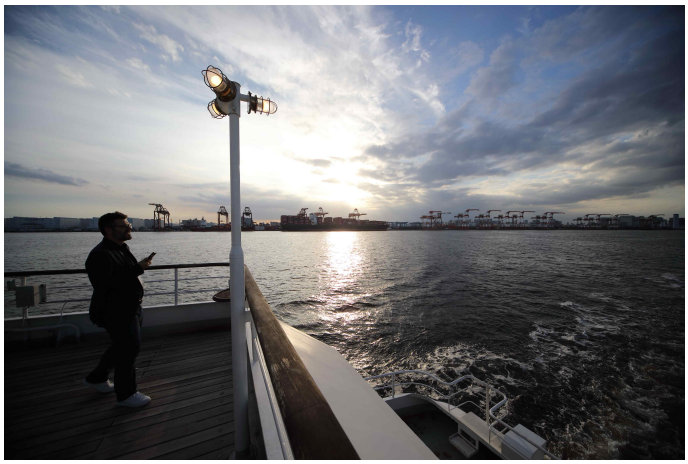

TOKYO









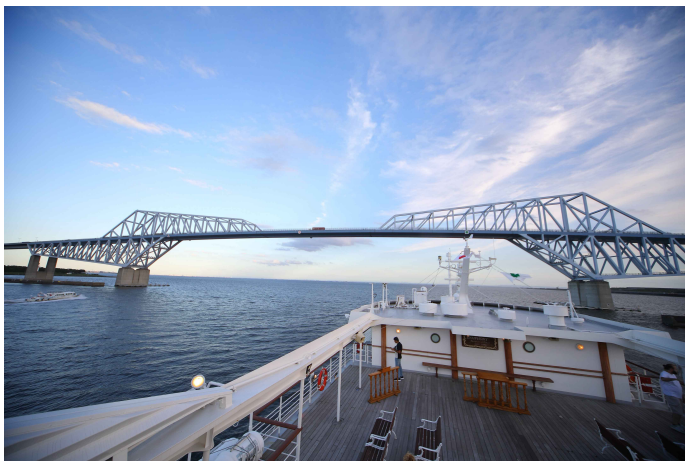












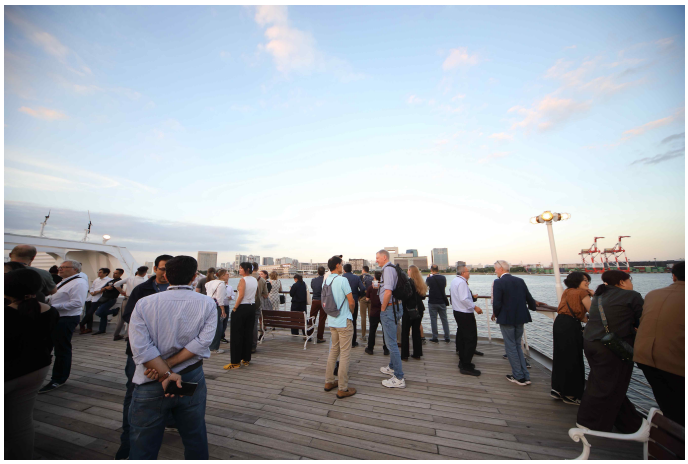










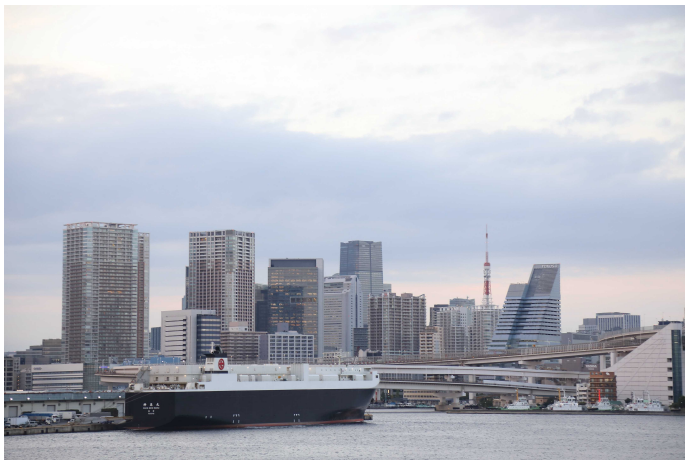





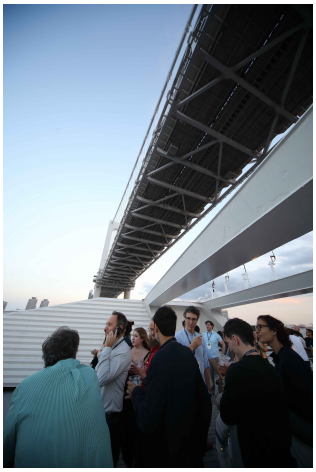






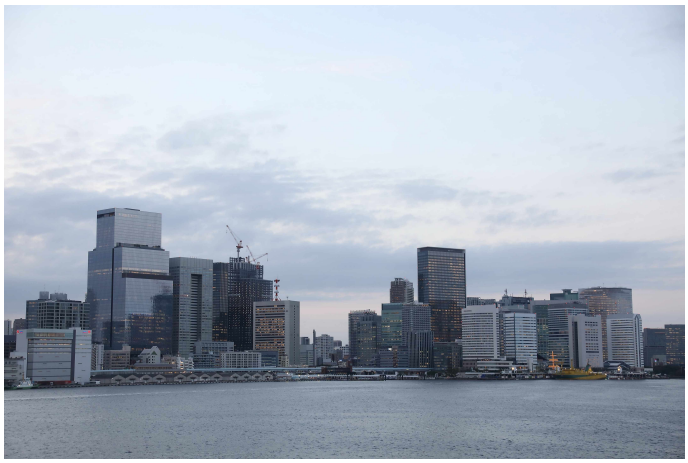


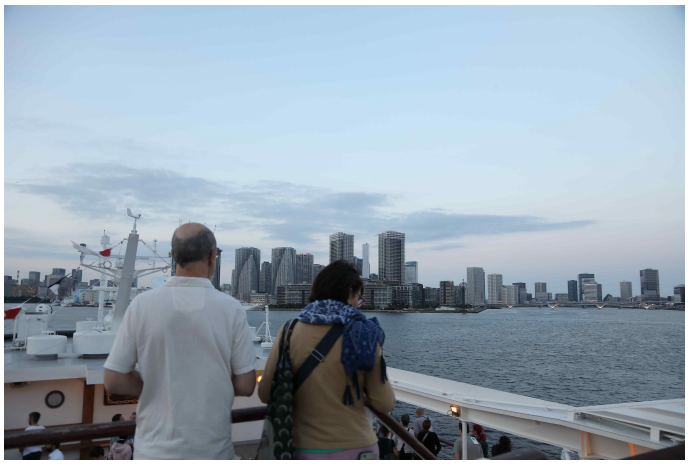










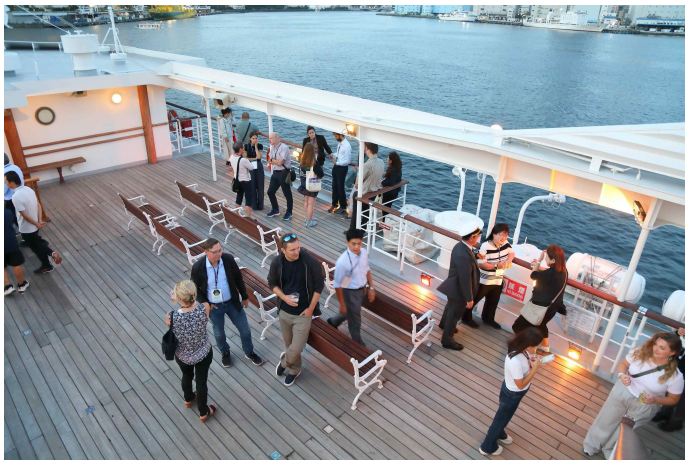




















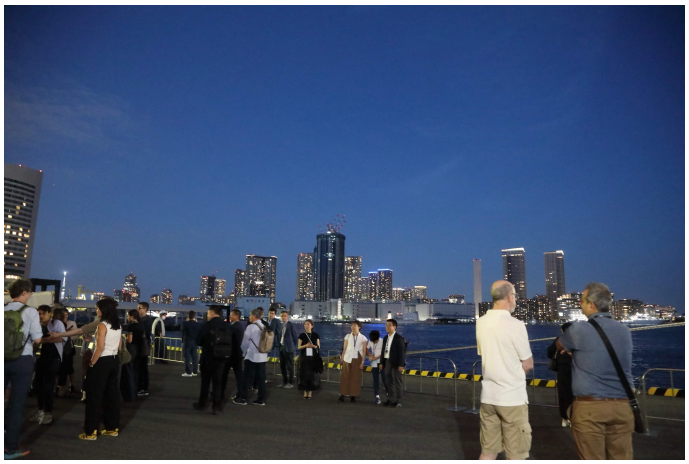

Heard
the
hots
















シンフォニー
SYMPHONY


• High power test
145 kW in pulse
• In pulse mode, t
repetition rate c
• In CW mode, 10
interlock.
• Total heat load a
cryocooler


This research v
technology innov
Cooperation Prog
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Dawn of
prevailed
accelera










































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September 26, 2025
Development of a traveling
structure for high gradient
Kellen McGee†, R. Kotstin‡, F. Furuta†, S. Kazakov†, T. Khabiboulline†, P. A
†FNAL ‡Euclid TechLabs
U.S. DEPARTMENT of ENERGY
Fermi National Accelerator Laboratory is managed by Fermi Forward for the U.S. Department of Energy Office of Science


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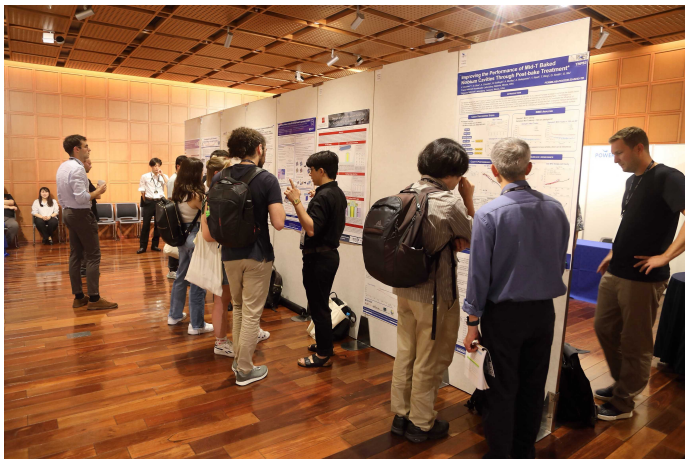
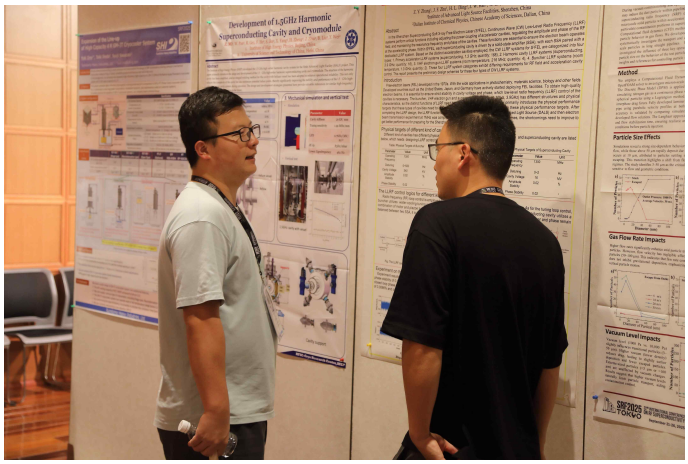
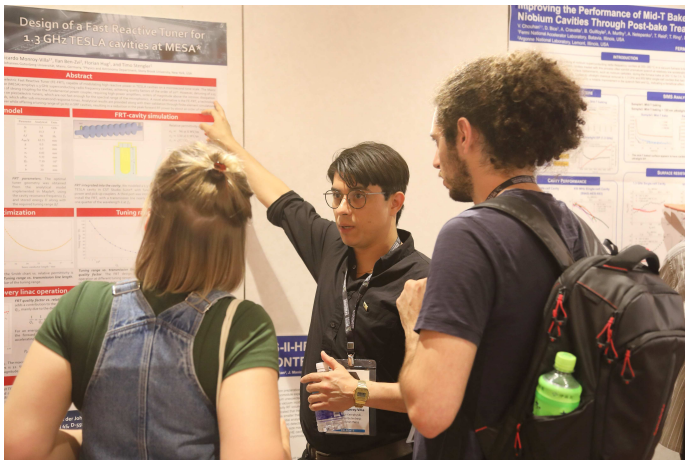
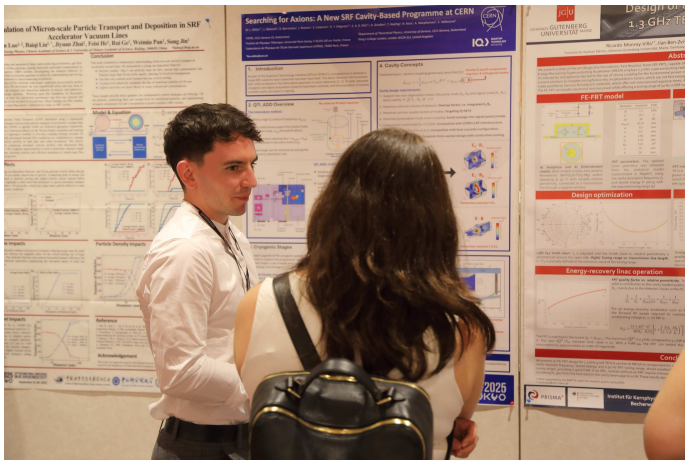
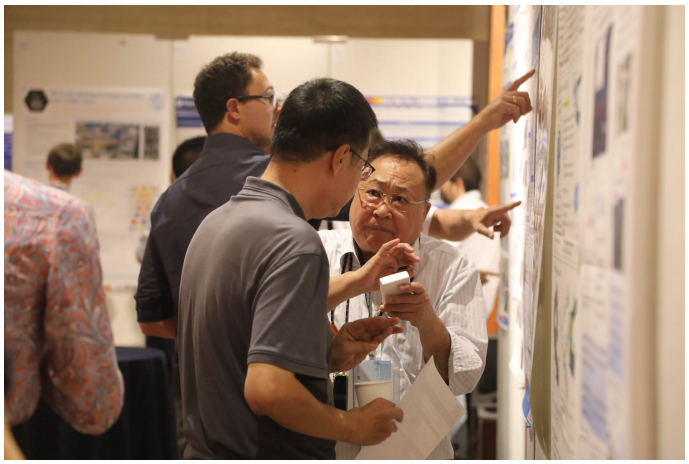
U.S. DEPARTMENT of ENERGY
FERMI NATIONAL ACCELERATOR LABORATORY




Development of 1.3GHz Harmonic Superconducting Cavity and Cryomodule


Design of a Fast Reactive Tuner for 1.3 GHz TESLA cavities at MESA
Improving the Performance of Mid-T Baked Niobium Cavities Through Post-bake Treatment


Searching for Axions: A New SRF Cavity-Based Programme at CERN





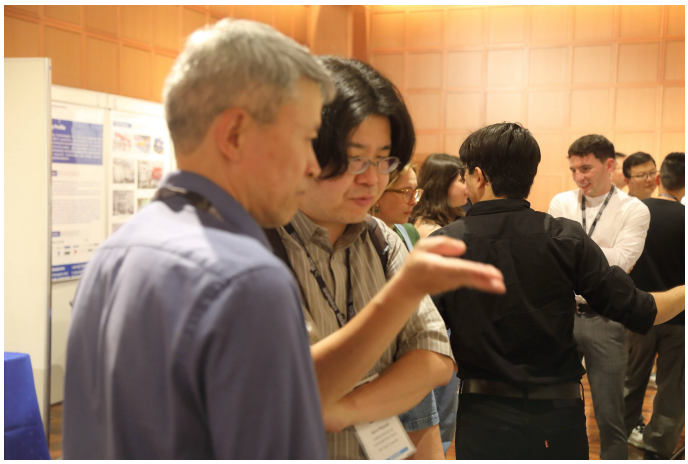

CONSTRUCTION OF THE LB650 PRE-PRODUCTION CRYOMODULE FOR THE PIP-II LINEAR ACCELERATOR



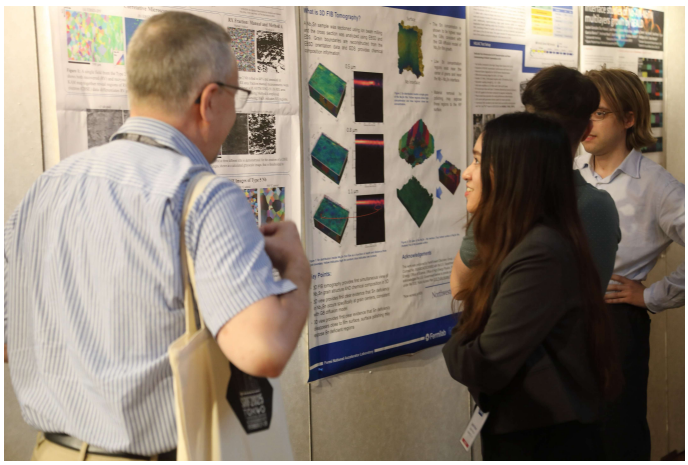

String assembly for the first HELIAC cryomodule

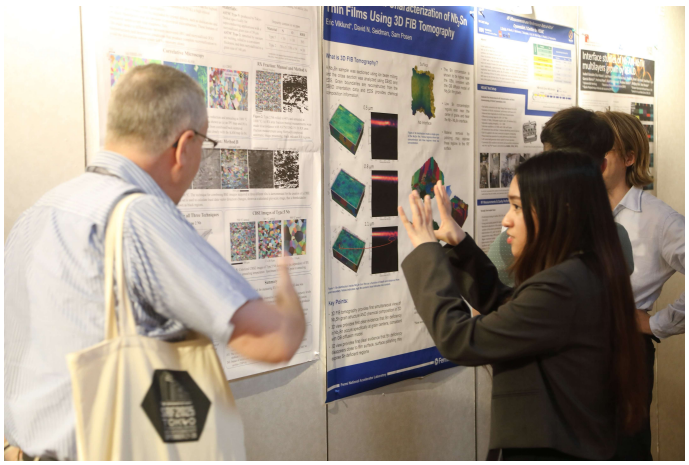

String assembly for the first HELIAC cryomodule



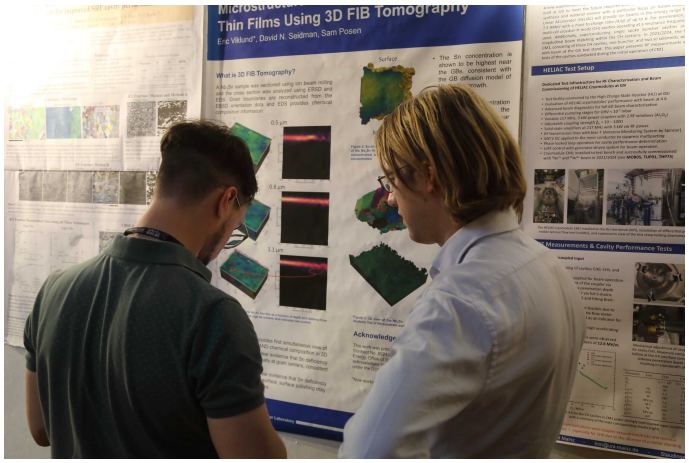






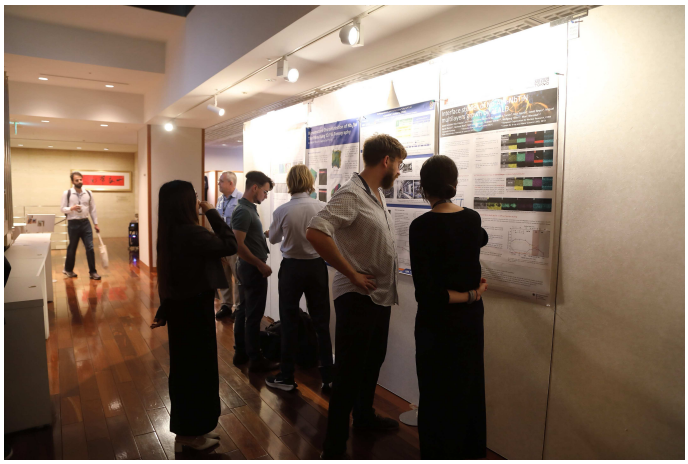

Thin Films Using 3D FIB Tomography


multilayers grow

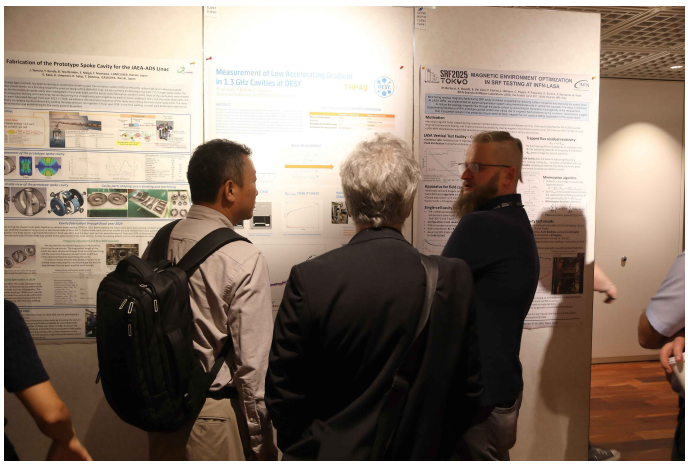

Thin Films Using 3D FIB Tomography
What is 3D FIB Tomography?
HELIAC Test Setup
Measurements & Cavity Performance Tests







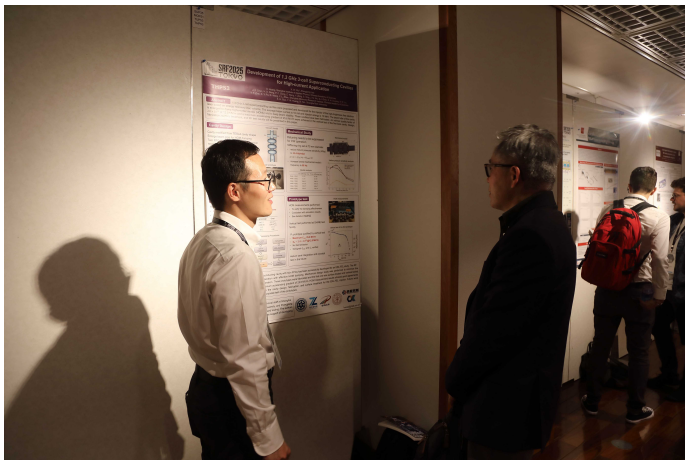



Fabrication of the Prototype Spoke Cavity for the JAEA-ADS Linac
Measurement of Low Accelerating Gradient in 1.3 GHz Cavities at DESY
SRF2025 TOKYO
MAGNETIC ENVIRONMENT OPTIMIZATION IN SRF TESTING AT INFN-LASA









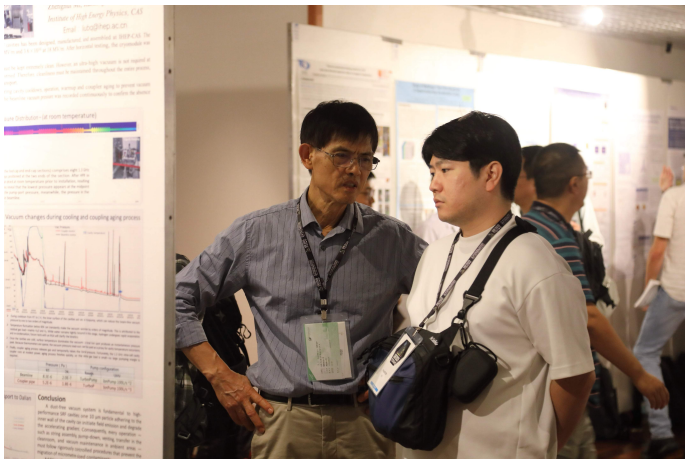




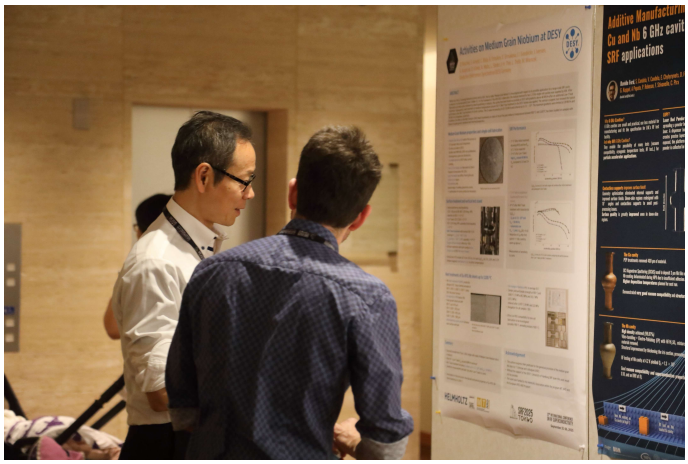


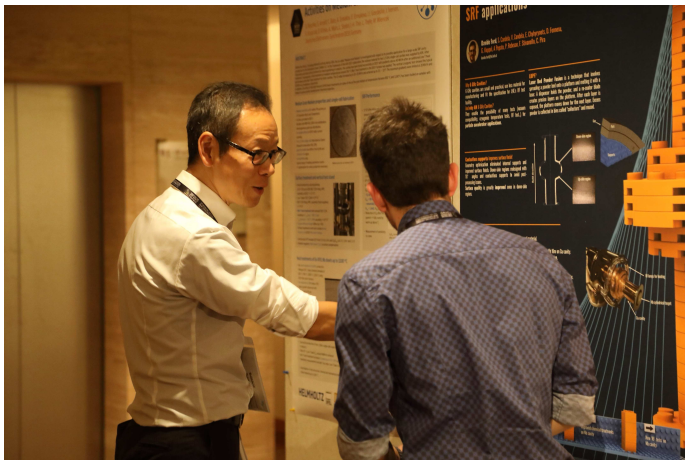








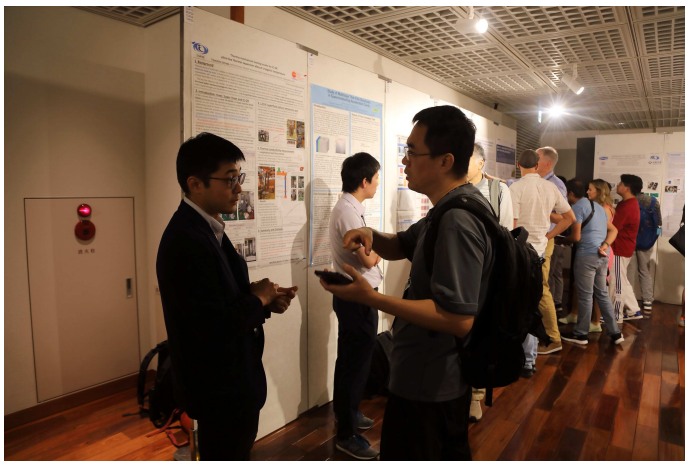

Additive Manufacturing
Cu and Nb 6 GHz cavity
SRF applications



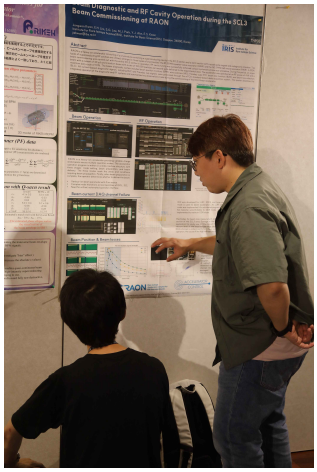


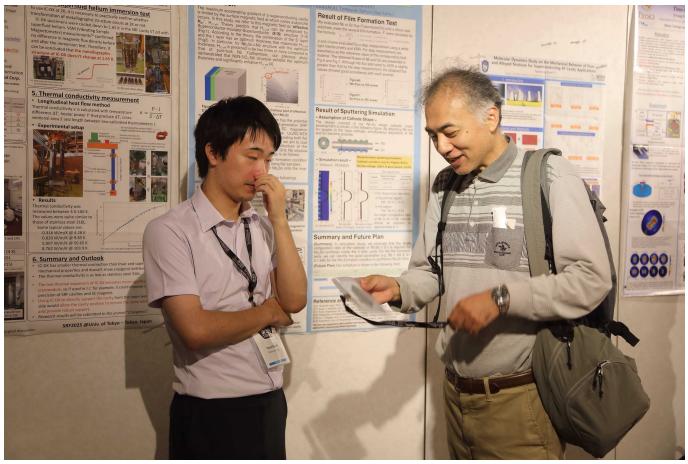


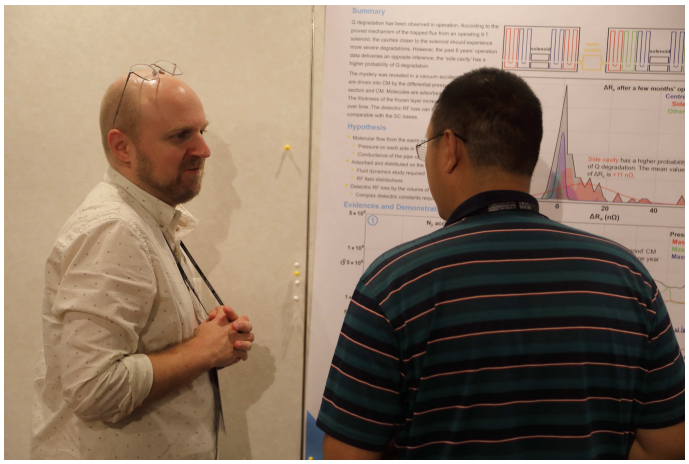

A LHe-Free Test Facility For Thin Film SRF Cavity Testing
Motivation
Cryogenic Facility

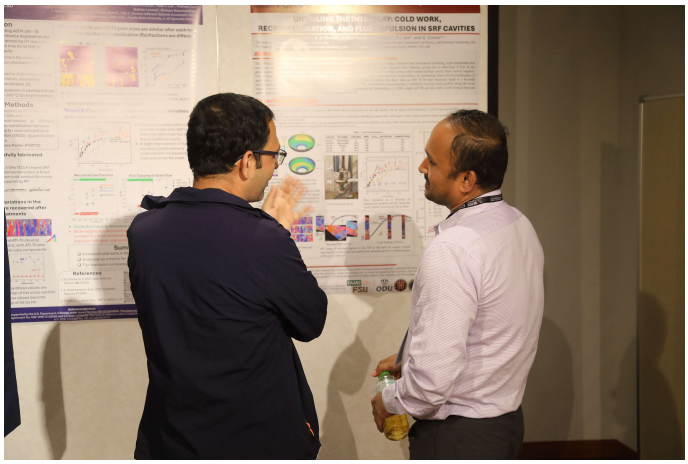


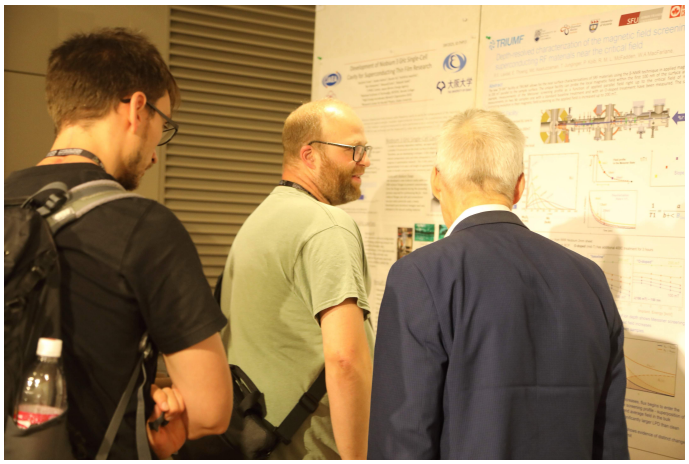








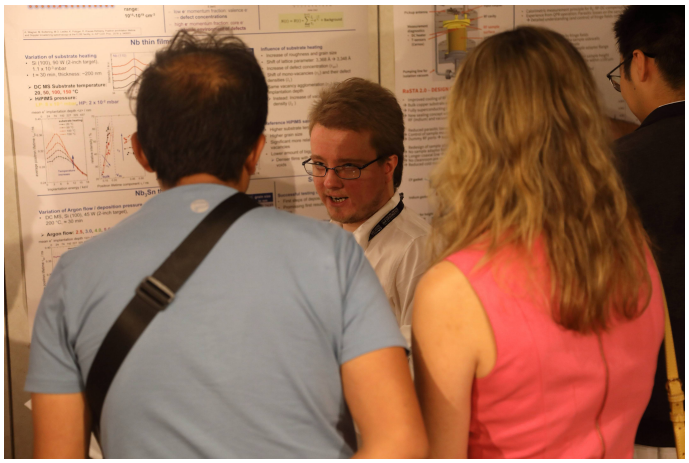






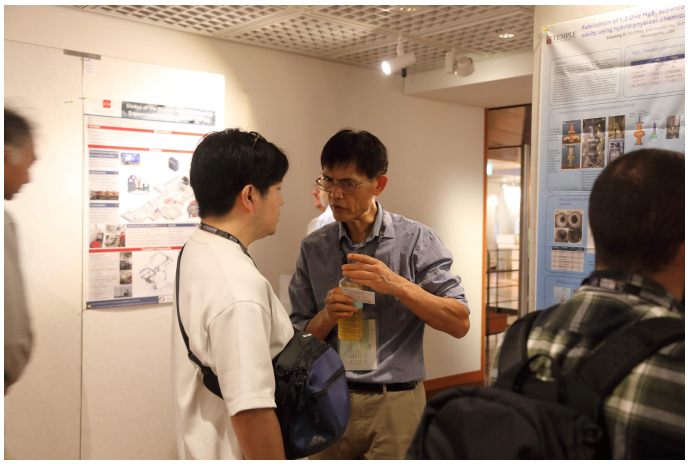


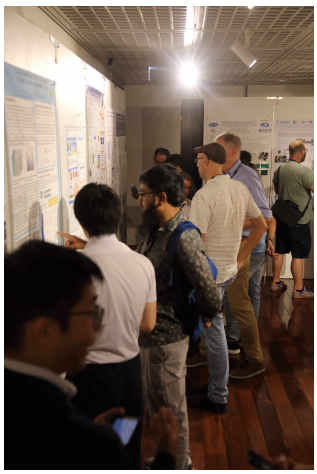


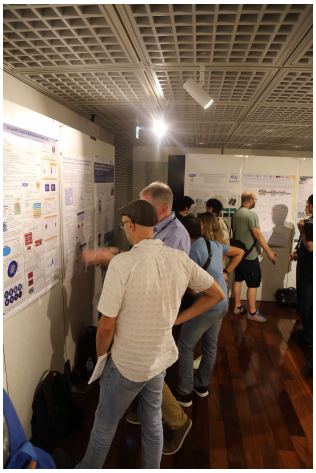


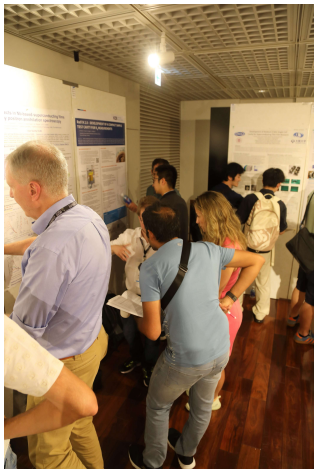


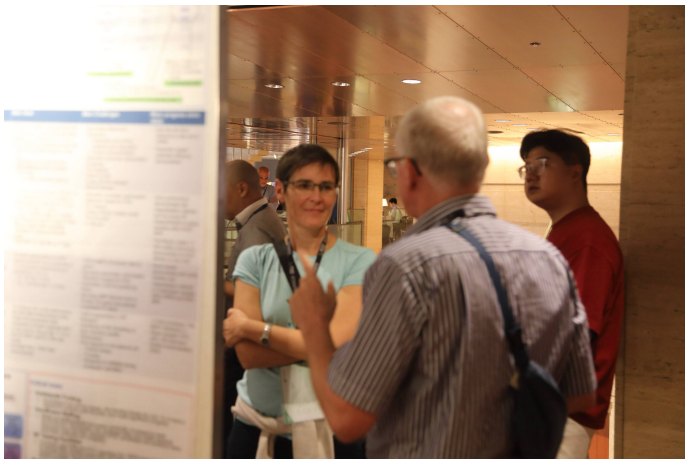










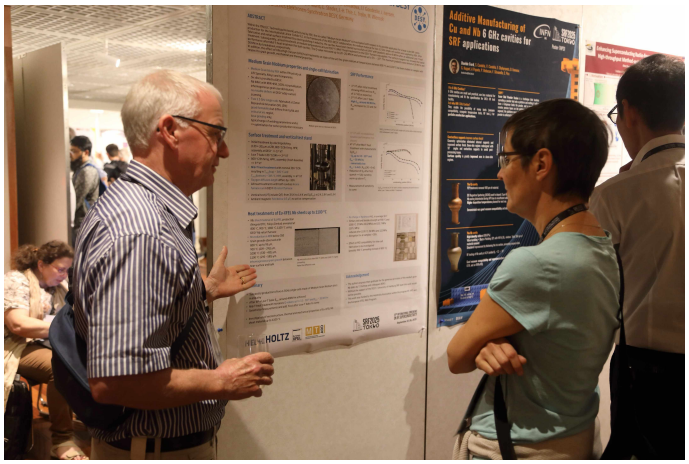




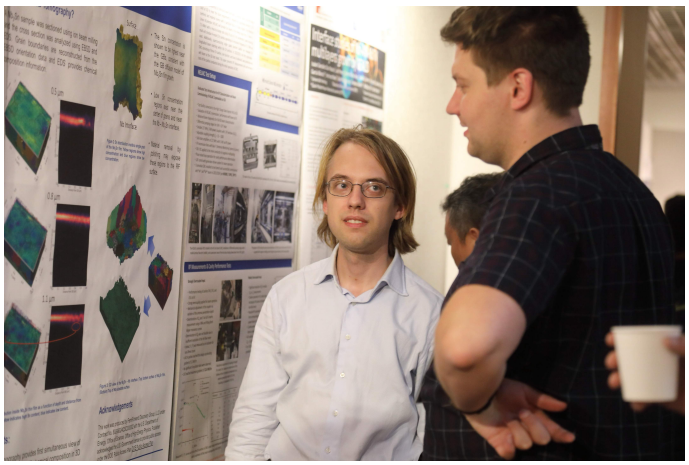


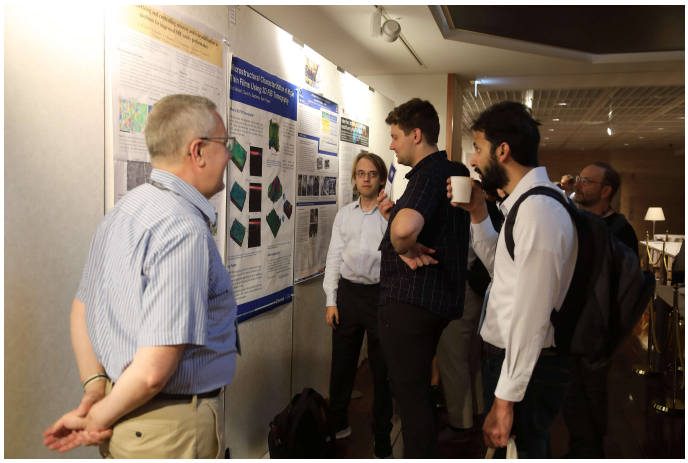





Additive Manufacturing of Cu and Nb 6 GHz cavities for SRF applications
HOLTZ






















Student Award
Awardees
1st place :
Pragya Nama (The Graduate University for Advanced Studies, SOKENDAI)
"Design and CW RF transmission test up to 100 kW of L-band high-power inpu
2nd place:
Lucas Wallace (University of Vict
vortex state in im
superconductors"
quality factor"
dioactive beam


Student Award
Awardees
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Pragya Nama (The Graduate University for Advanced Studies, SOKENDAI)
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Lucas Wallace (University of Victoria)
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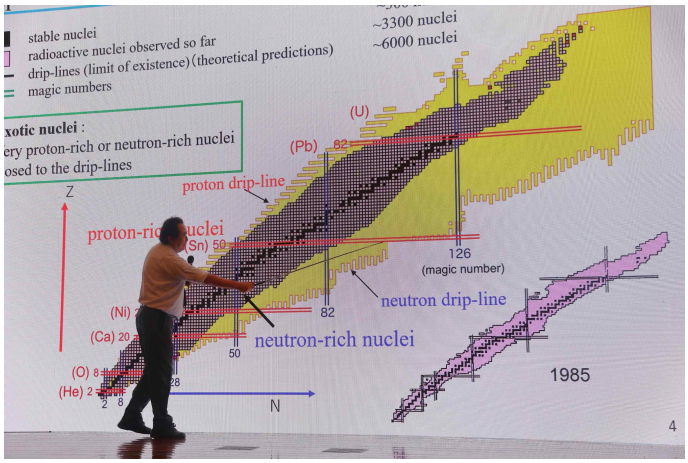
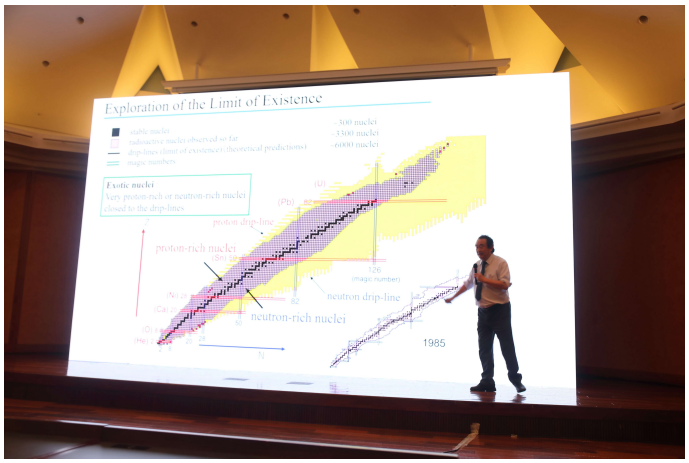
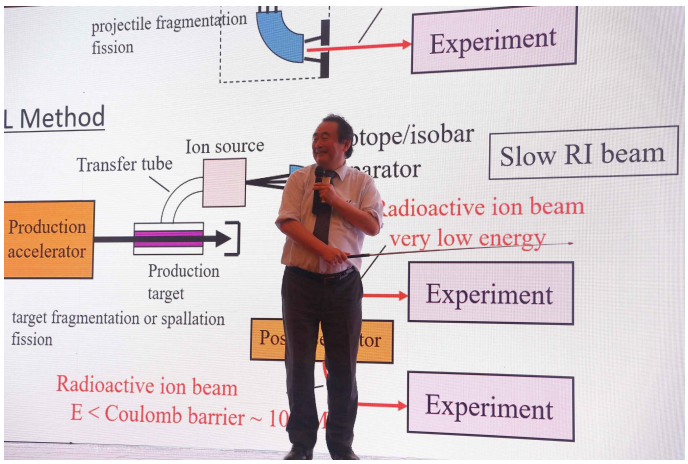
38:56


stable nuclei
radioactive nuclei observed so far
drip-lines (limit of existence) (theoretical predictions)
magic numbers
~3300 nuclei
~6000 nuclei
xotic nuclei :
ery proton-rich or neutron-rich nuclei
osed to the drip-lines
(U)
(Pb) 82
proton drip-line
Z
proton-ri uclei
(Sn) 50
126
(magic number)
neutron drip-line
(Ni)
82
(Ca) 20
50
neutron-rich nuclei
(O) 8
(He) 2
28
2 8
N
1985
4


Exploration of the Limit of Existence
proton-rich nuclei
neutron drip-line
neutron-rich nuclei
1985


projectile fragmentation
fission
Experiment
L Method
Ion source
Transfer tube
otope/isobar
arator
Slow RI beam
Production
accelerator
adioactive ion beam
very low energy
Production
target
Experiment
target fragmentation or spallation
fission
Pos tor
Radioactive ion beam
E < Coulomb barrier ~ 10
Experiment


Radioactive-isotope (RI) Beam Factory (RIBF): In-flight facility
RIBF started operations in 2007.
SRC: Superconducting Ring Cyclotron
World's First and Strongest K2600MeV
Uranium beam 345 MeV/u
SAMURAI
RareRI Ring
ZD
SHARAQ
BigRIPS
In-flight separator
World's Largest Acceptance
High magnetic rigidity 9 Tm
~250 MeV/u
Three spectrometers
for reaction studies with fast RI beams
ZeroDegree
SAMURAI
SHARAQ + OEDO (Univ. of Tokyo, CNS)
A storage ring (Rare RI Ring)
dedicated to mass measurement


SRF2025
TOKYO
TERNATIONAL CONFERENCE
UPERCONDUCTIVITY
SEPTEMBER 21-26


Fermilab








13:17:02




RIKEN
NISHINA
CENTER

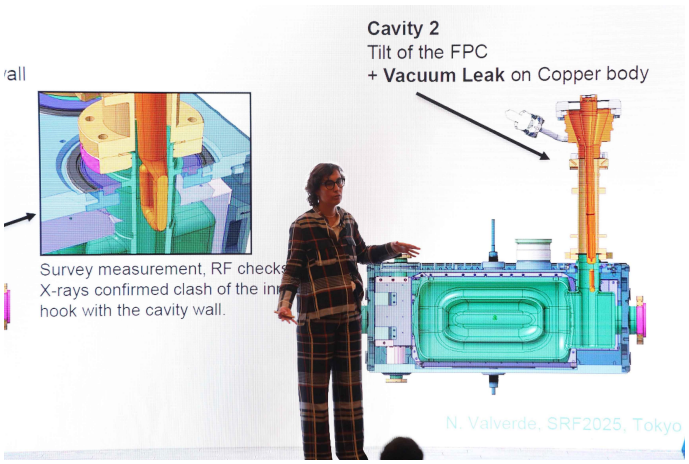











Cavity 2
Tilt of the FPC
+ Vacuum Leak on Copper body
Survey measurement, RF checks
X-rays confirmed clash of the in
hook with the cavity wall.
N. Valverde, SRF2025, Tokyo




























Passengers of the ship "SRF2025"
Regions
Asia
Europe
North America
160
110
60
330 Passengers!












Early Career Researcher Presentation Award
1st place
Nicole Verboncoeur (Cornell U.),
"Measurements of RF Magnetic Field Limits of Nb and Nb3Sn"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Hiroshi Sakai
Eiji Kako
POSTECH
KEK
iThemba LAB




12:54:28










SRF
2027
Padua
June 24 – 26, 2027 Tutorials
Milan
University "La Statale"
June 27 – July 2, 2027 Conference
Padua
Padova Congress




3:19:54
2025/09/26








SRCは東京タワーのおよそ2倍の
重さ8300トンの鉄の塊
SRCは超伝導方式により1/100の電力で動かせる


シンクロトロン
SRCは東京タワーのおよそ2倍の
重さ約300トンの鉄の塊
SRCは超伝導方式により1/100の電力で動かせる















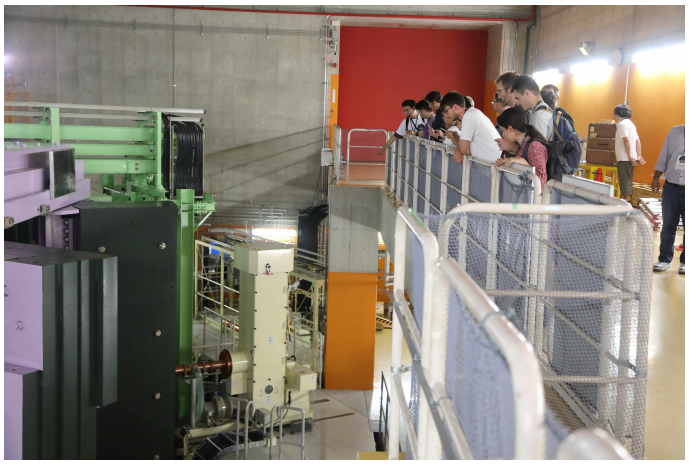










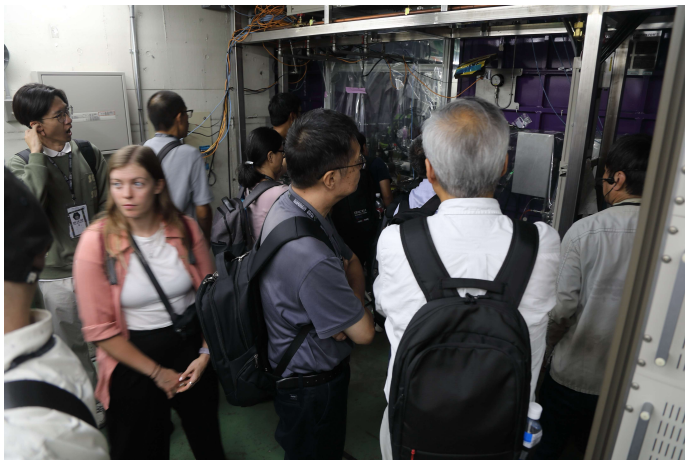


























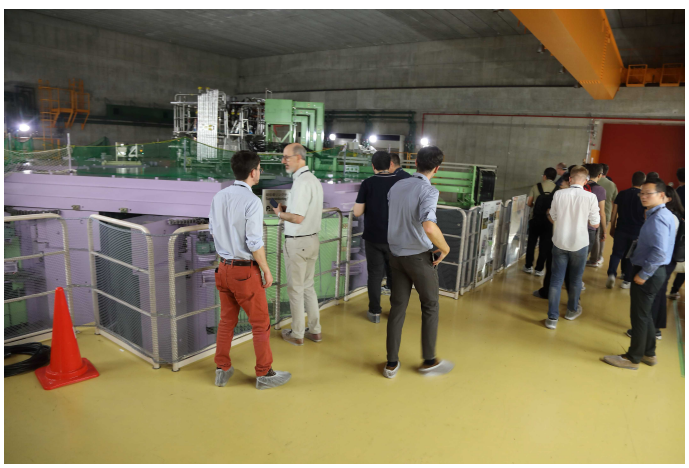



SRCは超伝導方式により1/100の電力で動かせる
1MeV=100万eV
原子核を破壊するエネルギー











SM3









