2026 International Workshop on the High Energy Circular Electron Positron Collider

Korea Light Source
Current Status and Future Plans

Seunghwan Shin (KBSI)
on behalf of all members of the KLS Project

2026. 10. 24.(Thu.)



KBSI KOREA BASIC SCIENCE INSTITUTE
PAL POHANG ACCELERATOR LABORATORY

CONTENTS

I

Project Overview

II

Conventional Facility Construction Status

III

Accelerator Development Status

IV

Beamline Development Status

V

Recent Highlights

VI

Future Plans

Project Overview

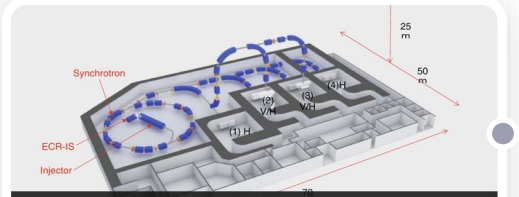


Current Status of Accelerators in Korea

Protons, Heavy ions, Heavy Particles, and Electrons



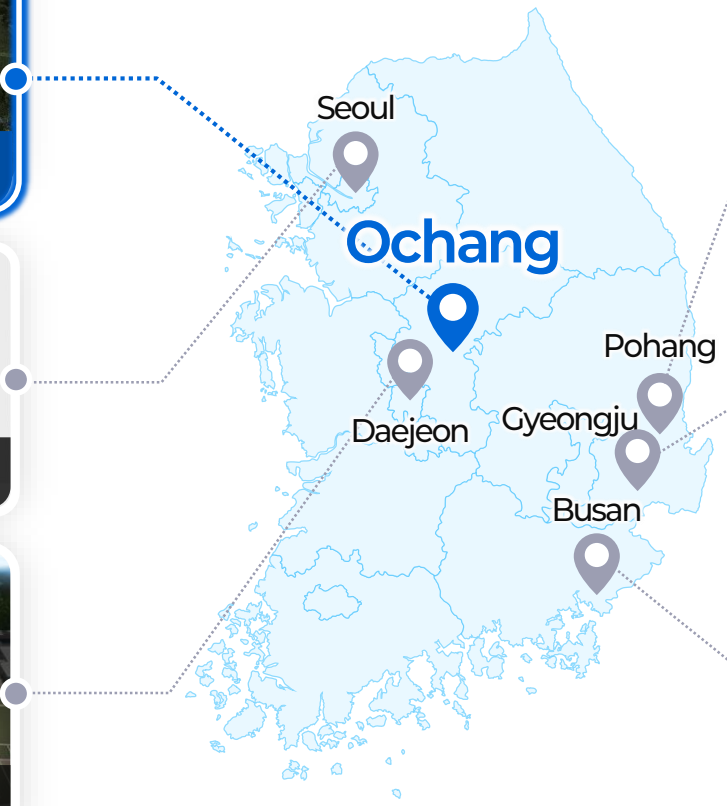
Ochang Multipurpose Synchrotron Radiation Accelerator



Seoul Heavy Particle Accelerator
(Medical use, Carbon)



Daejeon Heavy Ion Accelerator
(~Uranium)

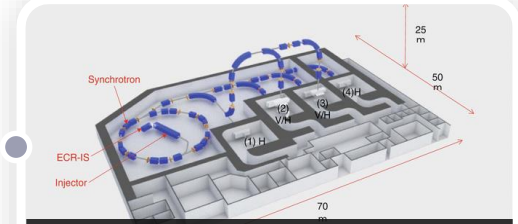




Pohang Synchrotron
Radiation Accelerator (PLS-II, XFEL)

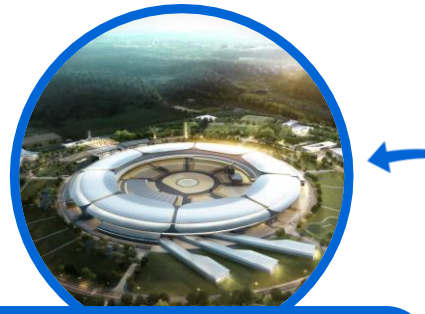


Gyeongju Proton Accelerator
(100 MeV)



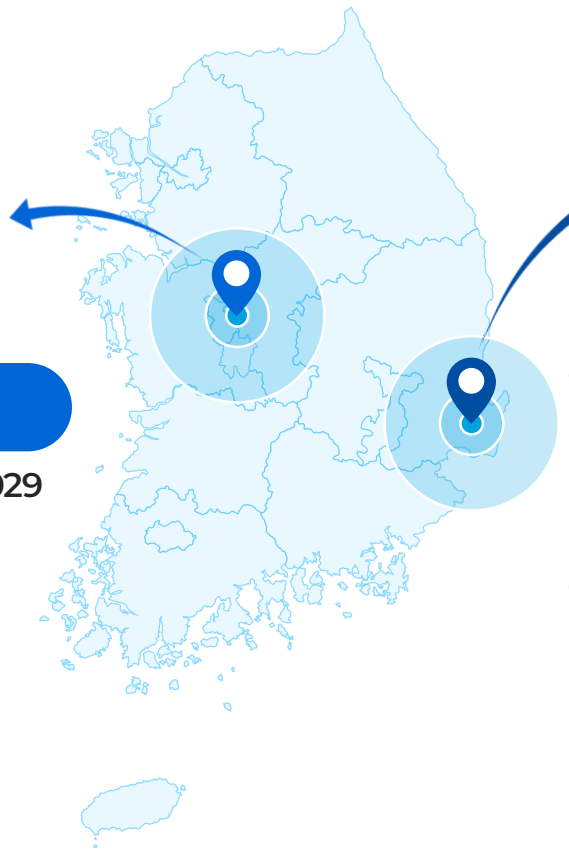
Busan Heavy Particle Accelerator
(Medical use, Carbon)

Current Status of Accelerators in Korea



Korea Light Source

- Operation : Expected in 2029
- Brightness : 100x brighter than 3rd generation





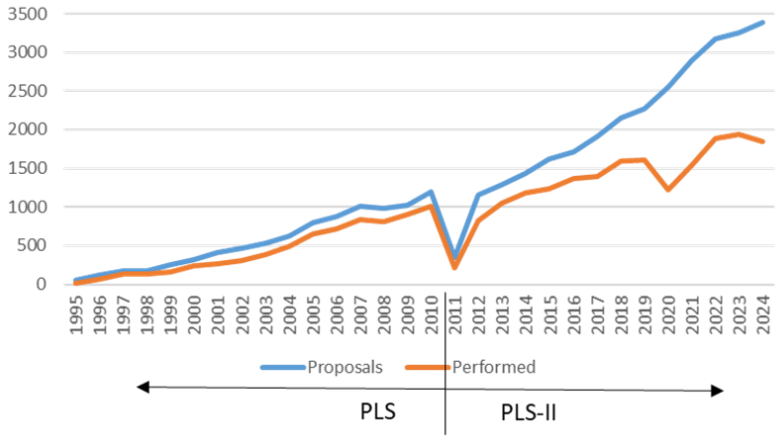
Pohang 3rd Generation Circular Accelerator (PLS-II)

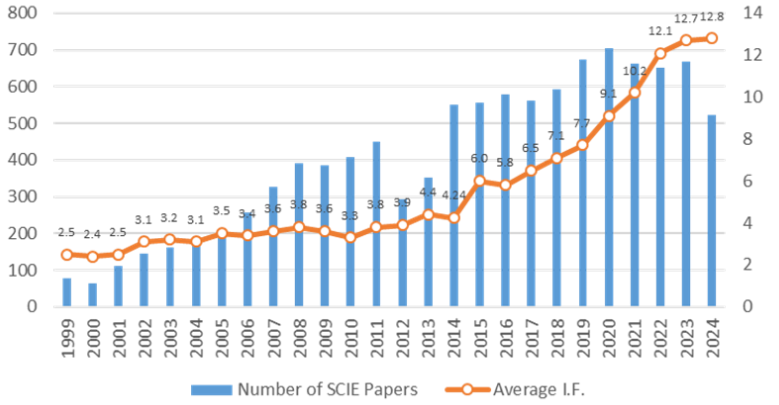
- Operation : 1994
- Brightness : 10 billion times brighter than the sun

Pohang 4th Generation Linear Accelerator (PAL-XFEL)

- Operation : 2015
- Brightness : 100 million times brighter than 3rd generation

Achievements of users and PAL





I. Project Overview

Fact Sheet

KBSI

Multipurpose Synchrotron Radiation
Construction Project Management Division

01 Project Progress

38.6 % Overall Progress

Infrastructure	34.2%
Accelerator Systems	43.9%
Beamline Systems	34.3%

02 Managed Activities(WBS)

8,201 activities

Beamline Systems 830 types	4,872
Accelerator Systems 510 types	3,060
Infrastructure	269

03 Project Workforce



KBSI KLS Project Office	81
PAL Joint KLS project staff	117

04 Research & Academic Achievements

Academic Conferences Hosted beamline & accelerator	12
Research Papers Published Beamline & accelerator	32
Conference Presentations Domestic & international Academic Events	286

05 Collaboration & Outreach

28 Institutional Collaboration Consultation · advisory · benchmarking	**20** User · Industry · Academia Engagement Forums · hearings · symposia
23 Public Events & On-site Outreach Promotional Booths · Briefings · On-site Outreach	**139** Media & Communications Press releases · card news · video

06 Cumulative KLS Website Visits

414,178

+208% YoY

77× vs. 2022



07 Key Public Engagement

KLS Naming Contest Entries

13,717

Online 10,383 | Offline 3,334

한국새빛가속기 KOREA LIGHT SOURCE

36 Promotional Activities

Press 6	On-site 9	Digital 8
Events 5	Ads 6	Trade media 2

Naming Contest · Groundbreaking

Groundbreaking Media & Outreach 111

Held July 27, 2026

99 Press Reports

National 19	Broadcast 11
Regional 41	Online 28

12 Other Promotion

Meetings 2	On-site 1
Card news 2	SNS 2
Outdoor 1	Misc. 4

08 Governance & Advisory

90 Project review · coordination · technical advisory

Progress Review Committee	25	Working-level Council	23
Technical Review Meetings	16	Project Promotion Committee	13
MAC Machine Advisory Committee	7	IAC International Advisory Committee	4
Project Coordination Committee	2	TOTAL	90

KLS Construction Project Overview

KBSI
Multipurpose Synchrotron Radiation
Construction Project Management Division



Project Period	July 2021 – December 2029 (8.5 years)	**Facility Scale**	Site Area: 540,000 m² ※ Including base site of 310,000 m² Total Floor Area: 69,525 m²
Lead Organizations	Ministry of Science and ICT / Chungcheongbuk-do / Cheongju City ※ (Government) Equipment & research facility construction, etc. (Local governments) Land, ancillary facilities, etc.		
Project Cost	Total: **KRW 1,164.3 Billion** (National) KRW 964.3B / (Local) KRW 200.0B (land acquisition, etc.) Total cost ▲ Managed scope: KRW 1,053.5B ▲ Outside managed scope: KRW 110.8B		
Location	**Ochang-eup, Cheongju-si, Chungcheongbuk-do** (within Ochang Techno-Polis Industrial Complex)		
Design Specifications	**Electron Beam Energy: 4 GeV** (Storage ring circumference: approx. 800 m) **Beam Emittance:** ≤ 100 pm·rad (Design target: 58 pm·rad) **Beamlines:** 40+ (Insertion device beamlines: 24) **Acceleration method:** Electron gun → Injector LINAC → 4 GeV Booster **Lattice:** MBA-based 7BA electron optics array		

KLS Beamlines

Priority support for industries

① BioPharma-BioSAXS
② Material Structure Analysis
③ Soft X-ray NanoProbe

Support for Academic R&D

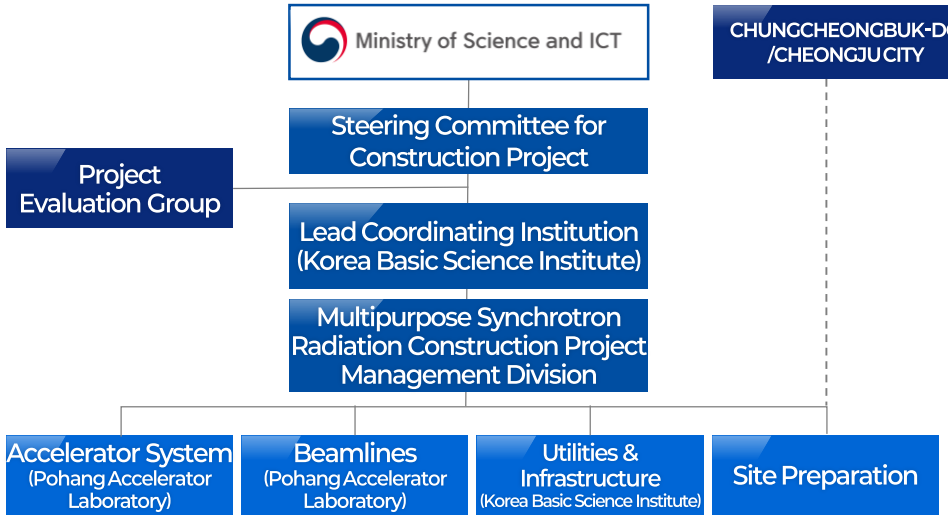
④ Nanoscale Angle-resolved Photoemission Spectroscopy
⑤ Coherent X-ray Diffraction
⑥ Coherent Small-angle X-ray Scattering
⑦ Real-time X-ray Absorption Fine Structure
⑧ Bio Nano crystallography
⑨ High Energy Microscopy
⑩ NanoProbe





Project Governance & Organizational Structure

Project Governance



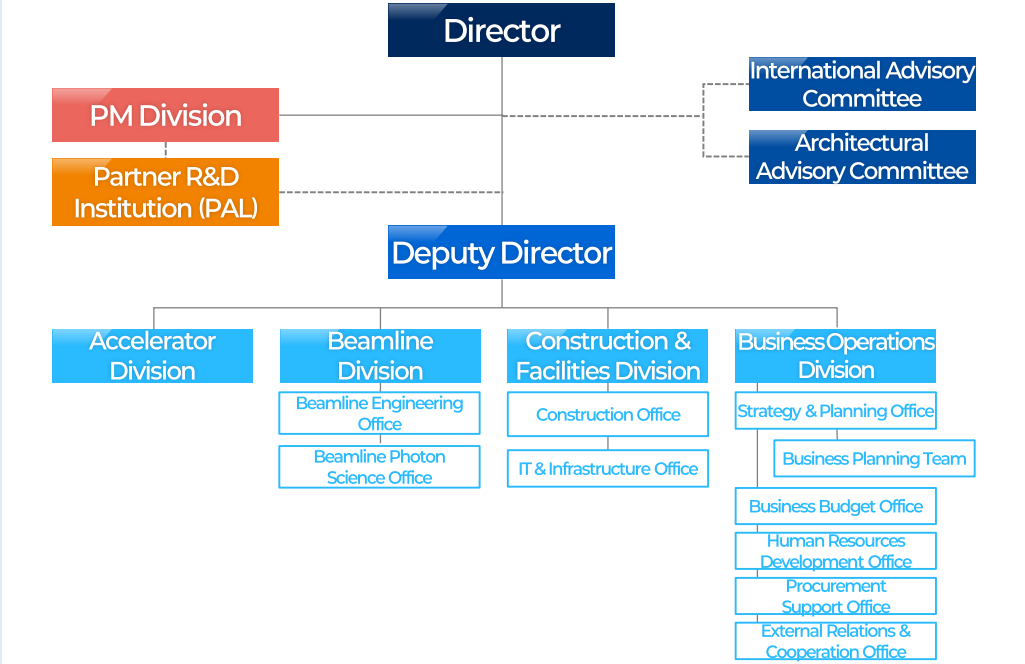
Competent Ministry — Ministry of Science and ICT
※ A Steering Committee has been established and is in operation to deliberate on major project matters, such as annual project plans.

Project Management — National Research Foundation of Korea
(Evaluation and Progress Management)

Lead R&D Institution — Korea Basic Science Institute
(Multipurpose Synchrotron Radiation Accelerator Construction Business Unit)

Partner R&D Institution — Pohang Accelerator Laboratory (PAL), POSTECH

Organizational Status of the Project Office:
1 Deputy Director, 5 Divisions, 9 Sessions, 1 Team

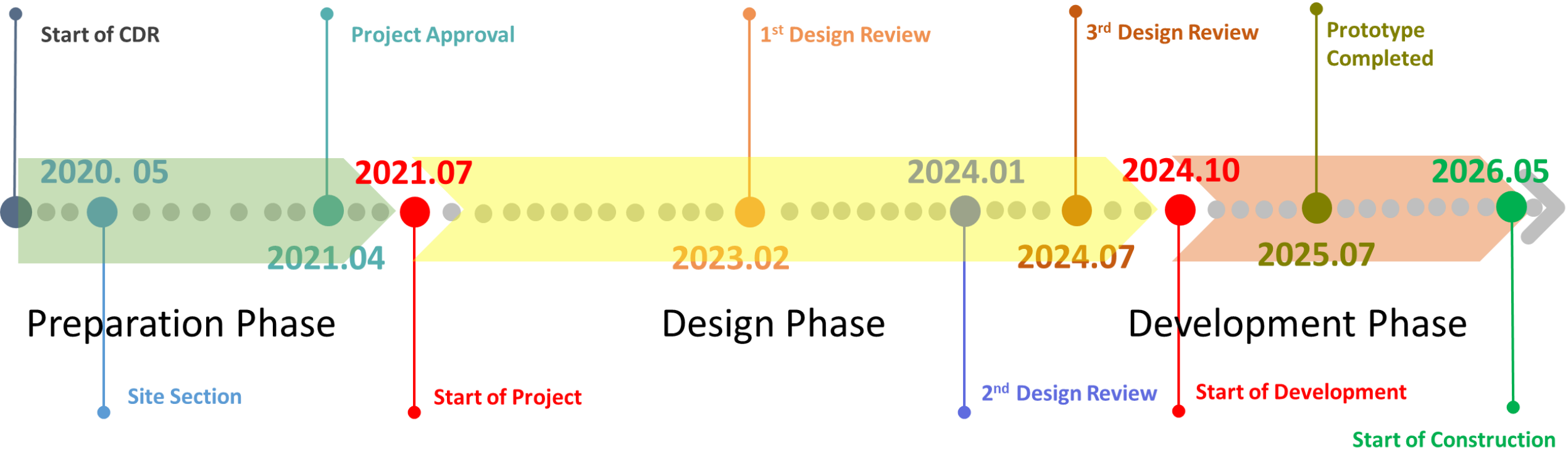


Personnel for the Korea Light Source Project Office:
Total of 81 (As of Aug. 18, 2026)

Director	Deputy Director	PM Div.	Accelerator Div.	Beamline Div.	Construction & Facilities Div.	Business Operations Div.	Subtotal
1	1	4	17	19	11	15	81

※ Includes 1 concurrent position at the main unit and 2 external researchers (dispatched to Cheongju-si).
※ A total of 183 personnel are participating in the construction project, including 117 members from the Pohang 4GSR Accelerator Research Group.

Our Journey


Start of CDR
Project Approval
1st Design Review
3rd Design Review
Prototype Completed
2020. 05
2021.07
2024.01
2024.10
2026.05
2021.04
2023.02
2024.07
2025.07
Preparation Phase
Design Phase
Development Phase
Site Section
Start of Project
2nd Design Review
Start of Development
Start of Construction

II. Conventional Facility Construction Status

KBSI Multipurpose Synchrotron Radiation Construction Project Management Division

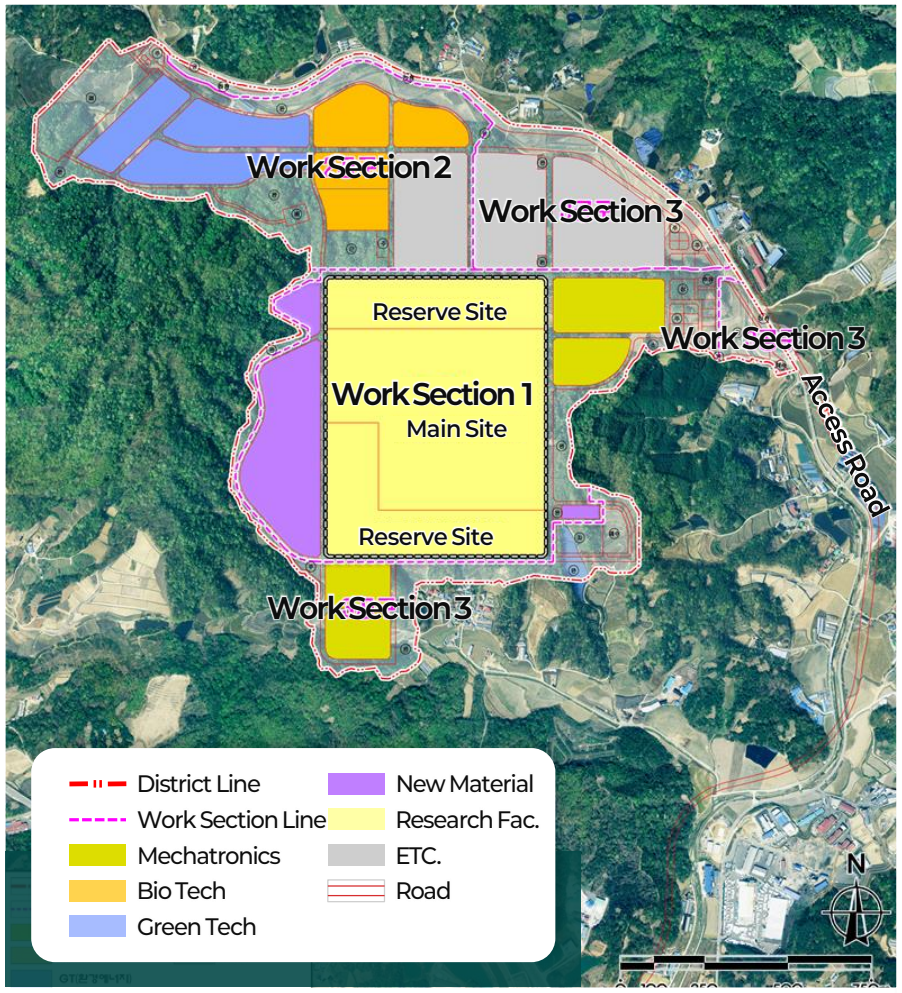


Accelerator Site Overview

Multipurpose Synchrotron Radiation
Construction Project Management Division

Location and Layout

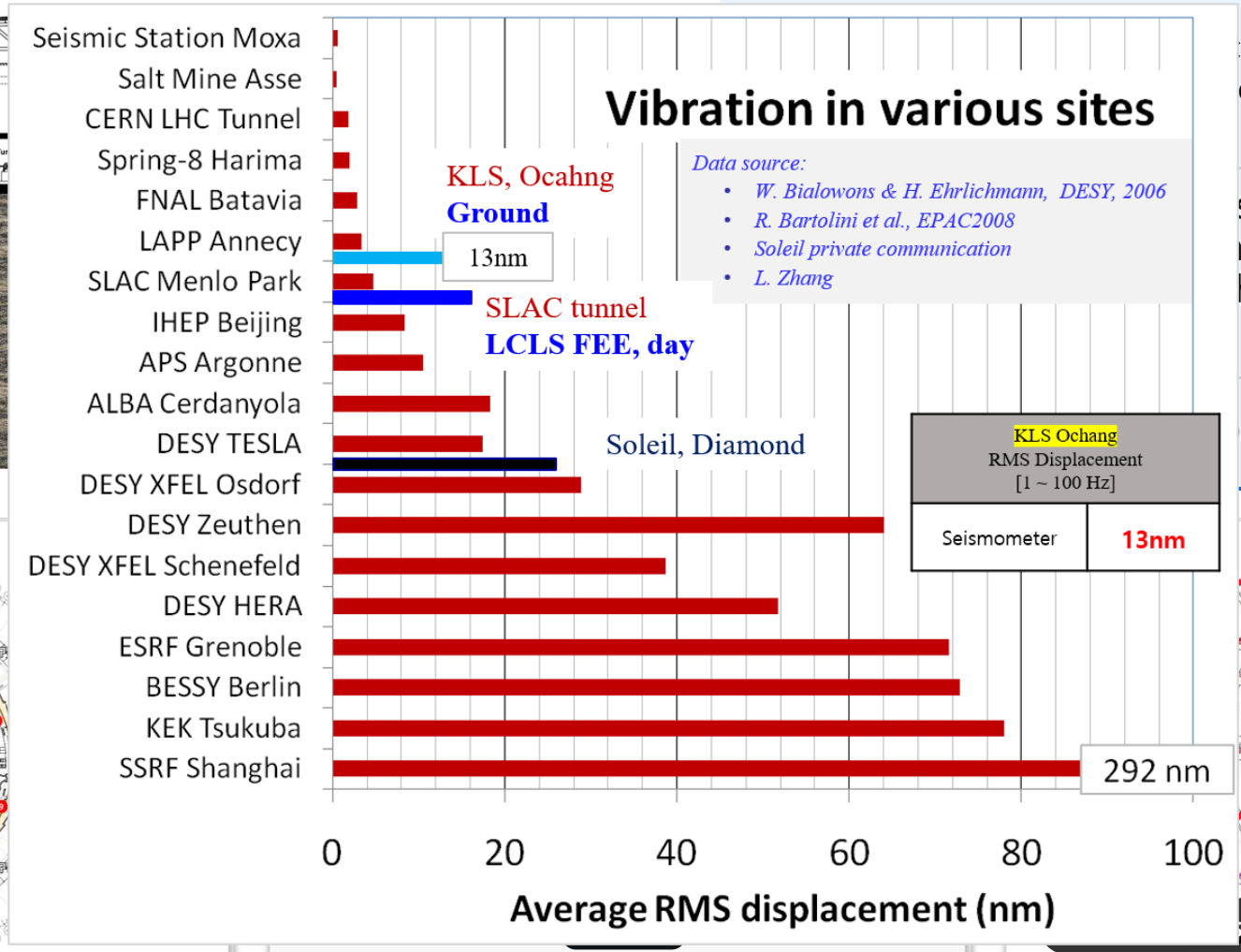






Geological Conditions

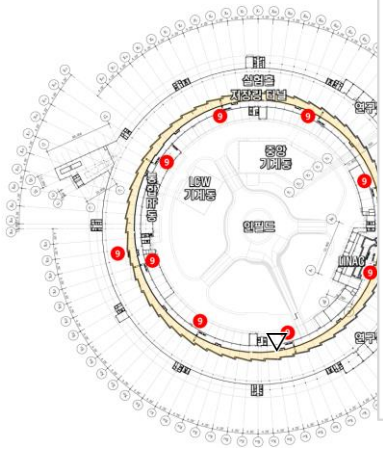


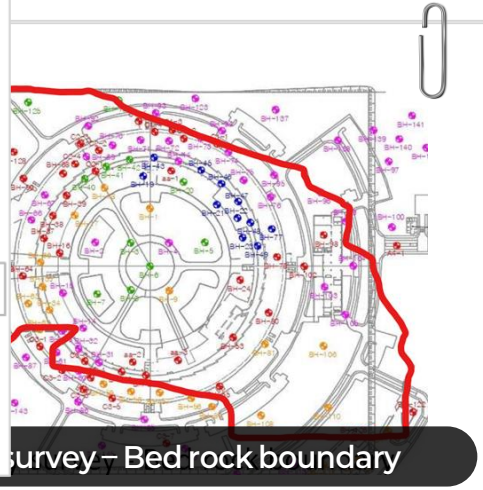


celerator facility will be
commodate vibration

s designed as a mat
n isolated footing by
ht to accommodate the

r the SR tunnel is 100 nm.





urvey – Bed rock boundary

Construction Project Progress

Design & Construction

Selection of Design Firm & Commencement of Design (Sep. 2022) →
Completion of Schematic Design(Sep. 2023) → Completion of Detailed Design(Nov. 2024) →
Commencement of Construction Works(H1 2026) → Construction Completion (2029)

Construction Supervision Services

PQ Submission & Technical Proposal Evaluation(May 2025) → Negotiations with the Selected Bidder (Jun. 2025) → Contract Signing(Jul. 2025) → Pre-Commencement Coordination(Aug. 2025)
→ Commencement of Construction Supervision (May 2026)

Site Preparation Works

Site Preparation Works for the Accelerator Facility(H2 2024)
→ **Site Provision Agreement (Apr. 2026)**

※ Parties to the Agreement : Chungcheongbuk-do · Cheongju City ↔ KBSI

Power Supply Connection to the Grid [Chungcheongbuk-do]

Detailed Design (H1 2024) → Commencement of Construction (June 2025)
→ **Construction Completion (2027)**



Site overview_'25.9



Accelerator Facility Design

Multipurpose Synchrotron Radiation
Construction Project Management Division

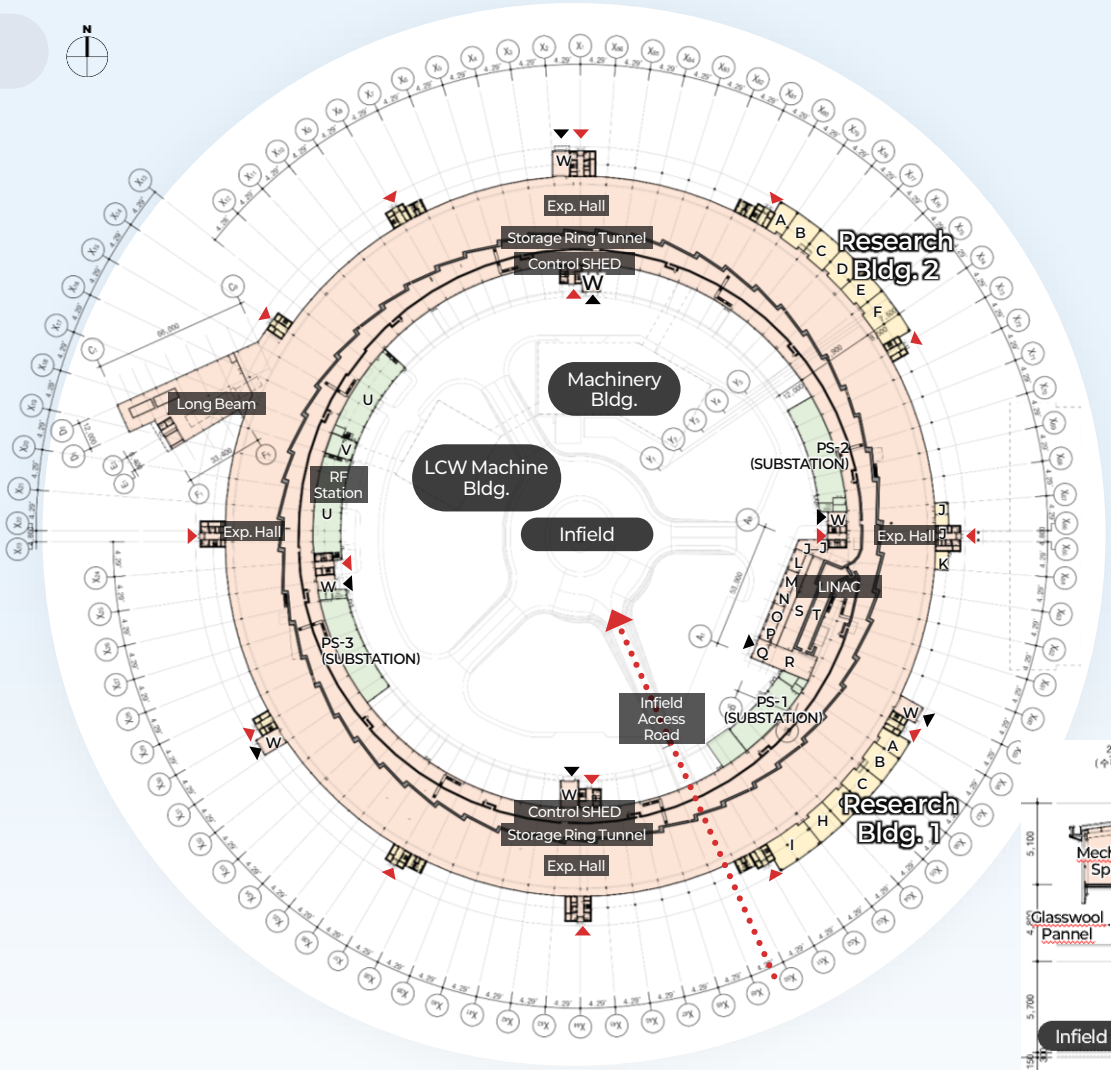
Accelerator Building 1F

Overview by buliding

- Accelerator building
- Research wing
- Utility building

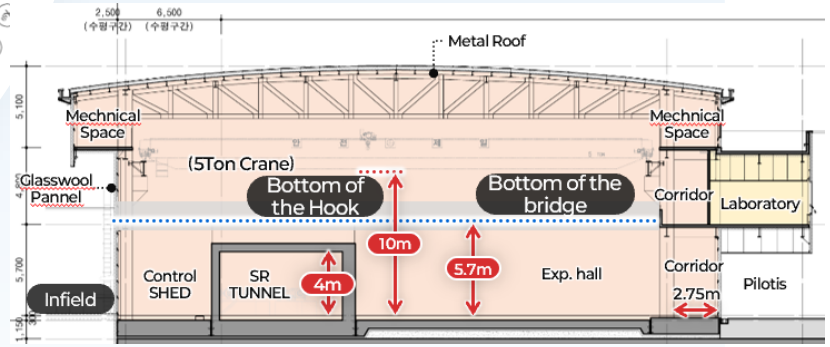
▲ : Pedestrian entrance
▲ : Vehicle entrance

A	Research Lab.	M	KM Lab
B	Chemistry Prep Room	N	Laser / LLRF Lab
C	Biology Prep Room	O	Control Room
D	Parts Room	P	Meeting Room
E	X-ray Optics R&D Lab	Q	Klystron Vestibule
F	E&E Development Lab	R	Klystron Assembly
G	Control Development Lab	S	Klystron Gallery
H	Vacuum Assembly Room	T	LINAC
I	Data Center	U	HPRF Room
J	Survey & Alignment Storage	V	RF Control Room
K	Visitor Lounge	W	Loading dock
L	Vacuum/Rf Lab		









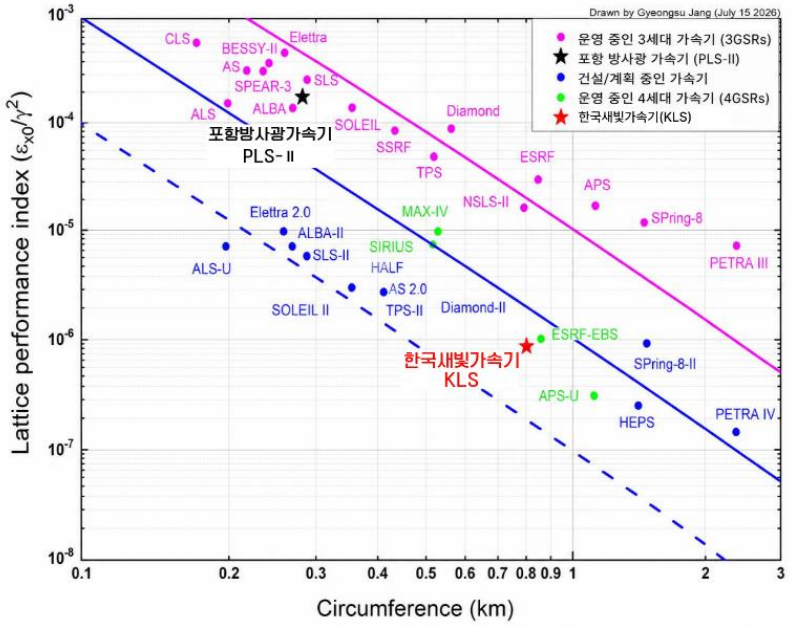
III. Accelerator Development Status

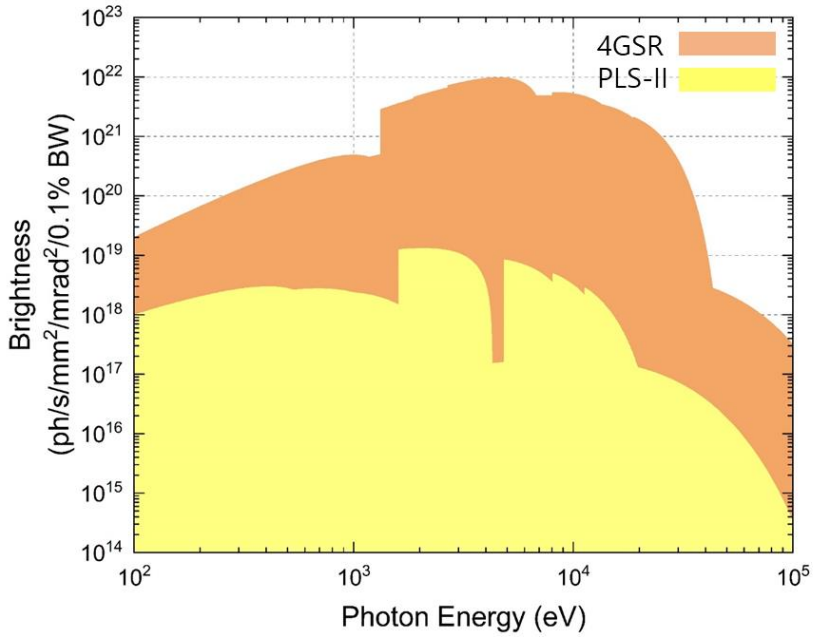


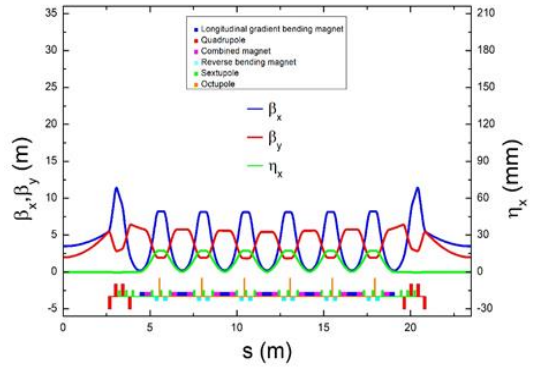
Features of KLS

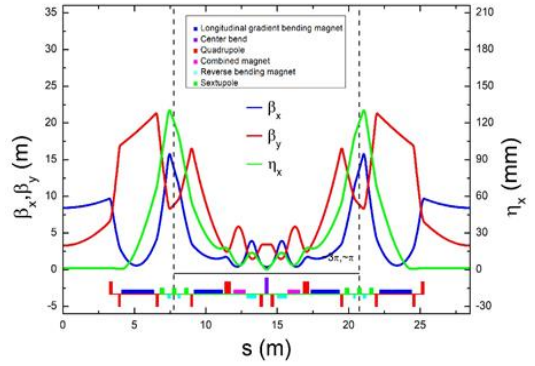
Multipurpose Synchrotron Radiation
Construction Project Management Division

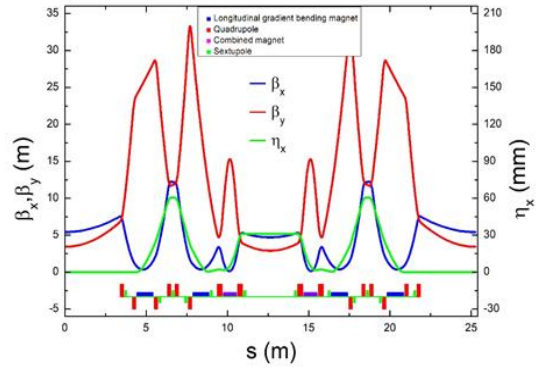
- **Optimized Performance:** Deliver world-class performance in the 2-30 keV photon energy range, where KLS is primarily optimized.
- **Future Expandability:** Maintain the potential to extend photon energy capabilities up to 100 keV for future scientific needs.
- **Proven Advanced Technology:** Use the latest proven technologies, combining cutting-edge performance with reliability.





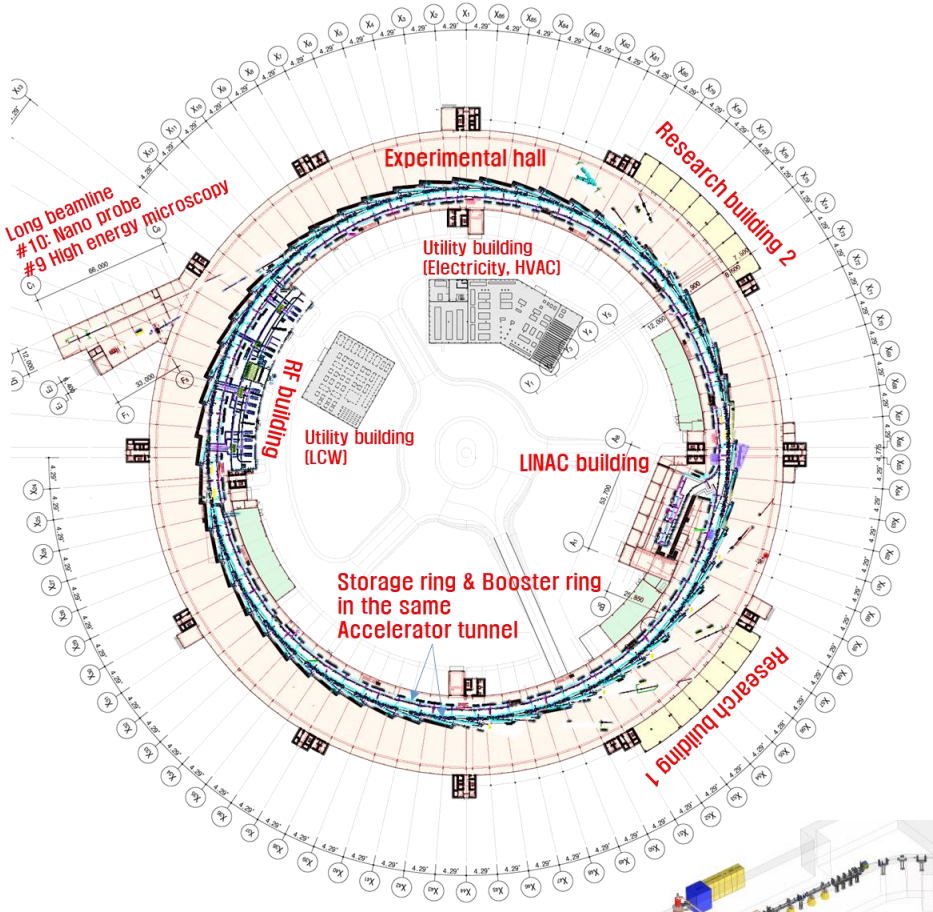


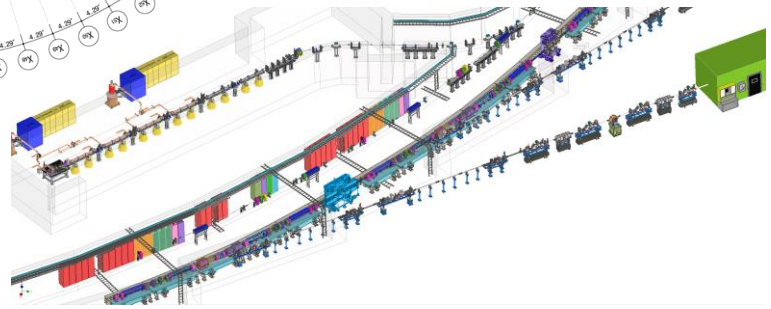




KLS Key Parameters

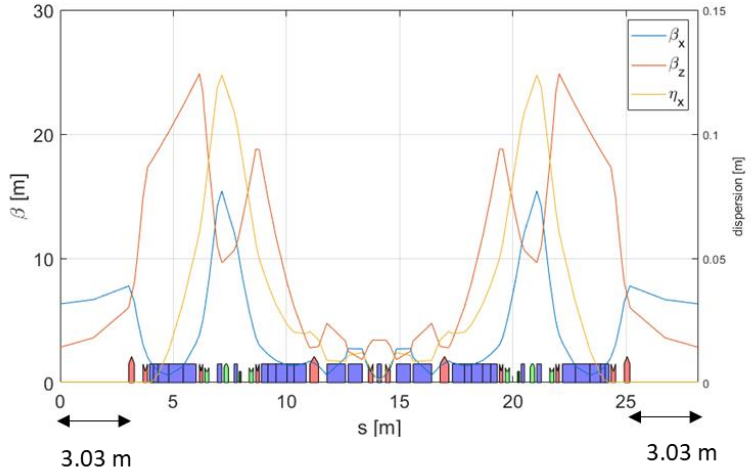
Multipurpose Synchrotron Radiation
Construction Project Management Division



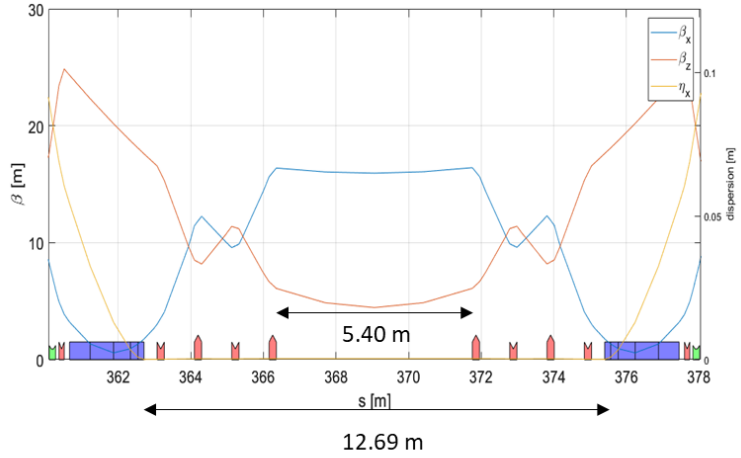


Storage Ring/RF parameter	Value
Energy [GeV]	4
Beam Current [mA]	400
Design Emittance [pm·rad]	61.57(w/o IDs) / 52.55(w/ IDs)
Emittance Coupling [%]	10
Energy Spread	1.26E-03
Bunch Length(rms)[mm]	3.6(w/o HC) / 14.4(w/ HC)
Lattice	Hybrid 7 Bend Achromat
Circumference [m]	799.297
Straight Section Length [m]	6.06
Tune (H/V)	68.179 / 23.260
(Corrected) Chromaticity (H/V)	5.8 / 3.5
Momentum Compaction Factor	7.80E-05
Number of Buckets	1332
Injection Scheme	4 kicker bumps, off-axis, 2Hz
RF Frequency [MHz]	499.593
RF Voltage [MV]	3.080(w/o IDs) / 3.5(w/ IDs)
Energy Loss per Turn [KeV]	1098(w/o IDs) / 1449(w/ IDs)

Storage Ring Design Configuration



Unit cell
(arc + normal straight section)

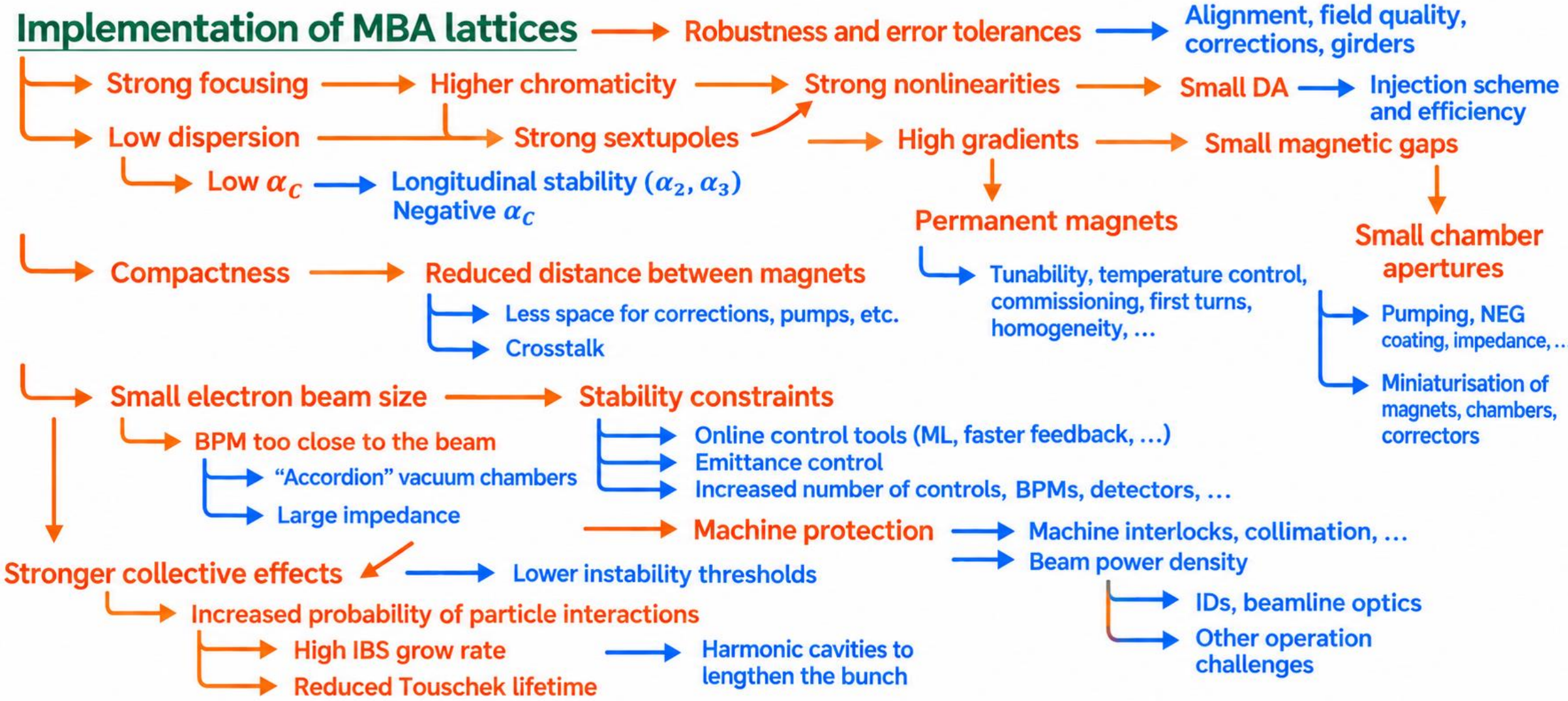


High-beta straight section

(Off-axis injection / RF cavity installation)

Category	Key Design Features
Lattice Design	• 28-cell configuration including 2 high-beta straight sections to optimize Dynamic Aperture (DA), Touschek lifetime, and photon-electron beam matching • H7BA unit cell featuring a 2 T centerbend • Application of Longitudinal Gradient Bend and Reverse Bend
Injection System	• Baseline design: Off-axis injection using 4-kicker bump • Alternative design: Application of Non-linear Kicker
SR Magnet System	• Configuration of over 1,000 magnets with established measurement and alignment plans • Additional application of Octupoles
Vacuum System	• Distributed pumping system utilizing pill-type getters • Bellows and gate valves featuring RF shielding finger structures made of slotted thin copper plates
SR RF System	• HOM-damped normal conducting RF cavities, powered by 150kW Solid-State Power Amplifiers (SSPA) per unit • 10 independent RF circuits, occupying a total of 2.5 straight sections

4GSR Challenges



4GSR Challenges

Implementation of MBA lattices → Robustness and error tolerances → Alignme… correctio…

- → Strong focusing → Higher chromaticity → Strong nonlinearities → Small DA…
- → Low dispersion → Strong sextupoles → High gradients → Small magnetic gaps
  - → Low α_c → Longitudinal stability (α_2, α_3)
    Negative α_c
  - → Permanent magnets
  - → Small chamber apertures
- → Compactness → Reduced distance between magnets
  - → Le…
  - → Cr…
- → Small electron beam size → …straints
  - → BPM too cl…
    - → "Acc…
    - → Larg…
- → Stronger collective effects → Lower…
  - → Increased probability of particle in…
    - → High IBS grow rate
    - → Reduced Touschek lifetim…

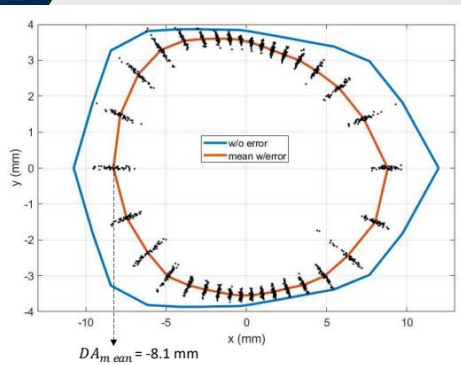
…ns, pumps, e…

…e control,
…rns,

…tance control

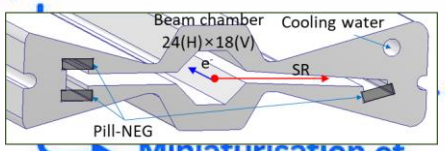
…e control tools (ML, faster feedback, …)

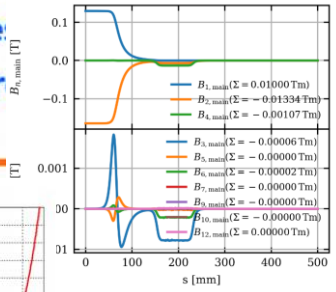
Miniaturisation of magnets, chambers, correctors

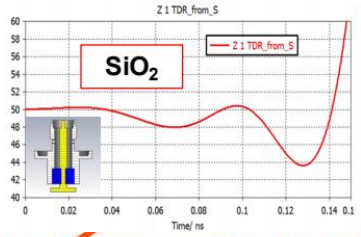


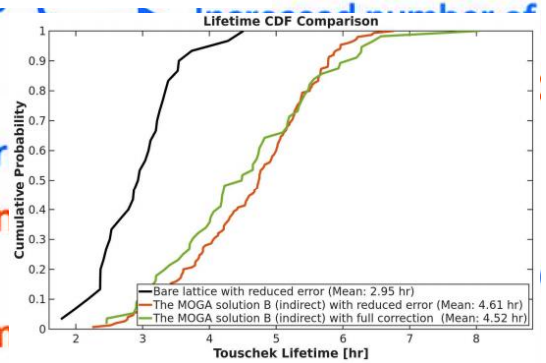
Dynamic aperture
@ high-beta straight section

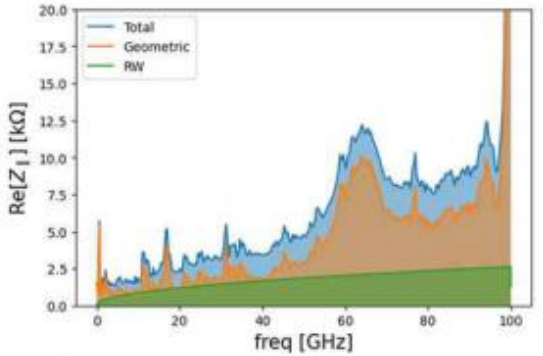




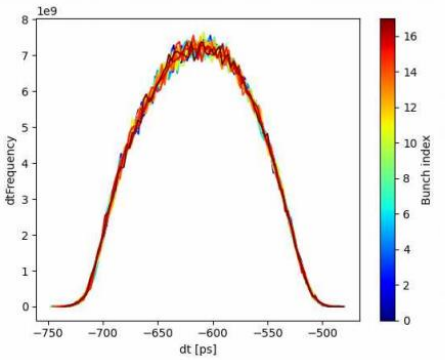




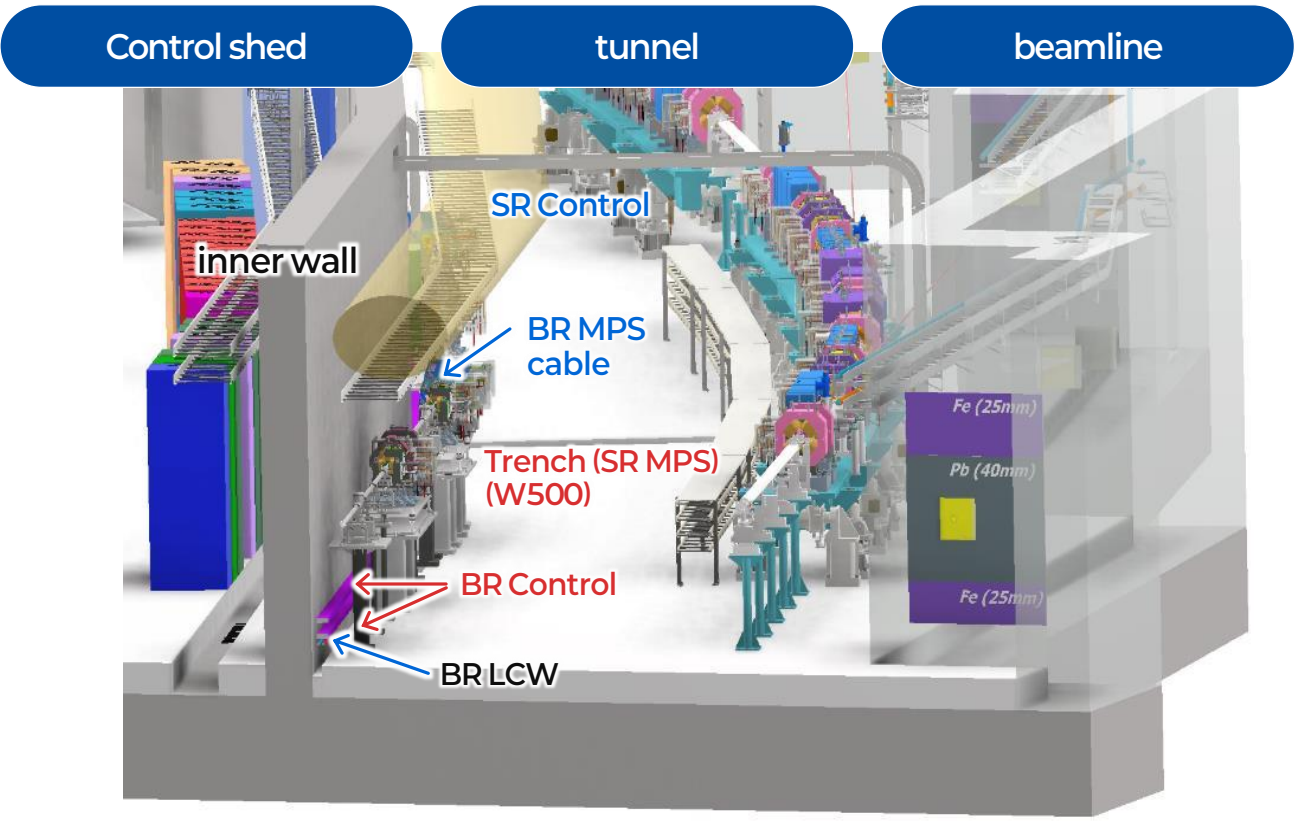




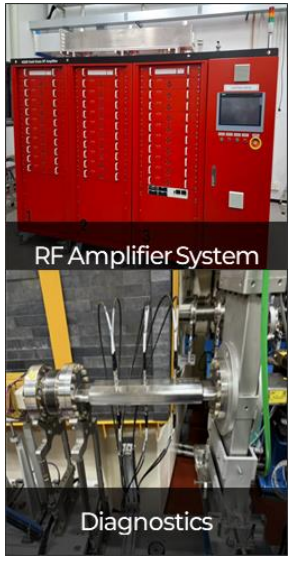
Density profiles along the train

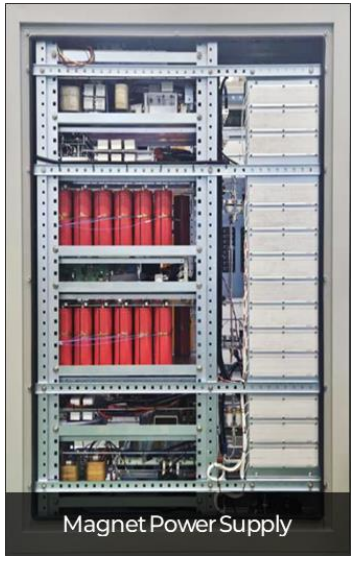


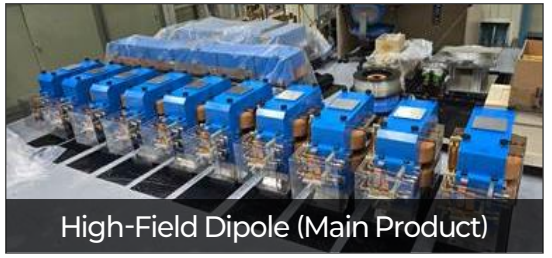
System Development Status

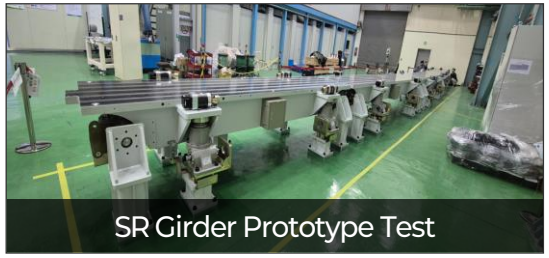












Accelerator System Development Schedule
(374.8 Billion KRW)

Design Completion ('24.7) → Total Budget Adjustment ('24.10) → Component Manufacturing*('24~) → Test & Assembly(~'29) → Installation /Commissioning

* Prototype development to achieve 80% localization (~'25), ongoing consultation with international experts.

IV. Beamline Development Status



Outline of Korea-4GSR Beamline Specification

Priority support for industries

Support for Academic R&D

	Beamlines	Photon Energy	Photon Source	Exp.	Application
#1	ID21 BioPharma-BioSAXS	8 ~ 23 keV	**IVU20**	Bio-SAXS	Biopharmaceuticals, Structural Biology, Bio Materials, Soft Matter
#2	ID24 Material Structure Analysis	17 ~ 45 keV	**IVU16**	HRPD, XRD	Material Science, Energy Materials, Quantum Materials
#3	ID26 Soft X-ray NanoProbe	0.1 ~ 2.5 keV	**EPU78**	STXM, Ptychography	Semiconductor, Material Science Energy Materials, Quantum Materials
#4	ID25 Nanoscale Angle-resolved Photoemission Spectroscopy	0.05 ~ 2 keV Optimized: 0.05 ~ 0.2 keV	**EPU98**	Nano-ARPES	Semiconductor, Material Science, Quantum Materials
#5	ID03 Coherent X-ray Diffraction	5 ~ 30 keV	**IVU22**	XRD, CDI	Semiconductor, Material Science Geoscience, Chemistry, Quantum Materials
#6	ID04 Coherent Small-angle X-ray Scattering	8.4 ~ 30 keV Optimized: 8 ~ 17 keV	**IVU20**	SAXS/WAXS (GI-SAXS), XPCS	Material Science, Chemistry, Quantum Materials
#7	ID23 Real-time X-ray Absorption Fine Structure	4 ~ 40 keV	**IVU24**	XAFS	Material Science, Environments, Geoscience, Chemistry, Quantum Materials
#8	ID22 Bio Nano crystallography	8 ~ 25 keV	**IVU20**	MX	Bio.
#9	BM10 High Energy Microscopy	20 ~ 150 keV	**Center-bend**	Projection imaging	Material Science, Energy Materials, Bio Science, Quantum Materials
#10	ID10 NanoProbe	5 ~ 25 keV	**IVU24**	Nano-XRF/XRD/XAFS, Ptychography	Semiconductor, Material Science, Geoscience, Chemistry, Energy Materials, Quantum Materials

Ground Plan for 4GSR

Industry Priority Beamline

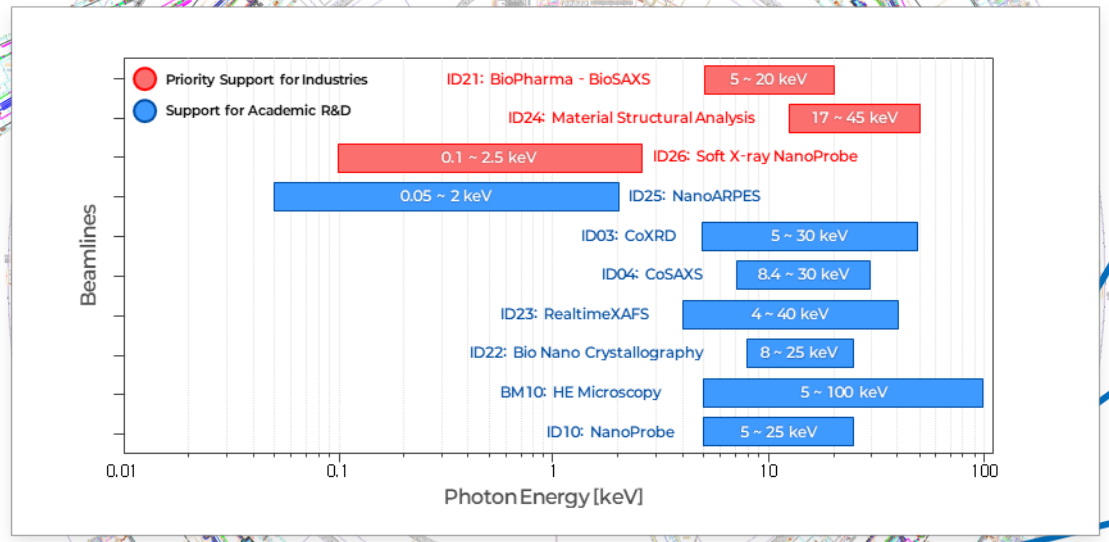
Public Beamline

ID04 : CoSAXS
8 – 30 keV / IVU20
Coherent SAXS (XPCS)

ID03 : CoXRD
5 – 30 keV / IVU22
CDI, Bragg CDI, XRD

ID10 : Hard X-ray Nanoprobe
5 – 25 keV / IVU24
150 m long / nanoscopy

BM10 : High Energy Microscope
20 – 150 keV / BM (H_C = 21 keV)
100 m long / phase-contrast



ID26 : Soft x-ray Nanoscopy
0.1 – 5 keV / EPU78 + IVU24
Soft x-ray spectroscopy

ID25 : Nano ARPES
0.1 – 2 keV / EPU98
Nano-ARPES / μ-ARPES

ID24 : Material Structure
6 – 45 keV / IVU16
Diffraction, HRPD

ID23 : Realtime XAFS
4 – 40 keV / IVU24
XAFS (tr-XANES, EXAFS)

ID22 : Nano MX
5 – 20 keV / IVU20
Molecular Crystallography

ID21 : Bio SAXS
5 – 25 keV / IVU24
Bio / Solution SAXS

Beamline Ports

Total straight Section(SS)	28
Occupied SS for BTL and RF	4
Available ID sections	24
Center band	28
Available ports	52
Beamline of Phase 1	10

Science Areas

Probing structure, dynamics, and electronic/chemical states of functional, quantum, and biological materials under real-world operating conditions.

Materials & Energy

ID24	All-solid-state battery electrode & electrolyte structure
ID24	Semiconductor process material qualification
ID03	Operando diffraction in battery test cells & in-situ chambers
ID23	Battery redox-mechanism tracking under operando cycling
BM10	Non-destructive 3D CT of battery packs & fuel cells

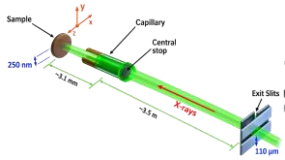
Structural Biology & BioPharma

ID21	Antibody / ADC conformational analysis
ID22	Fragment-based & high-throughput drug screening
ID22	De novo structure from protein microcrystals
ID04	Radiation-sensitive protein solution dynamics
BM10	High resolution imaging in biological specimens

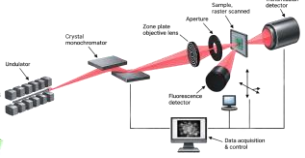
Quantum & Nanoscale Science

ID25	Moiré-superlattice & twisted-bilayer band mapping
ID04	Battery electrolyte & catalyst operando nanostructure
ID03	3D strain-field imaging in semiconductor nanostructures
ID26	Semiconductor defect & dopant chemical mapping
ID10	Nanoscale elemental distribution in battery electrodes

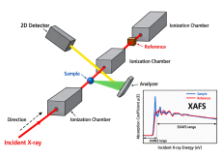
Soft X-ray Tender X-ray Hard X-ray



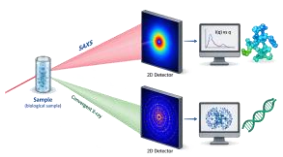
nanoARPES



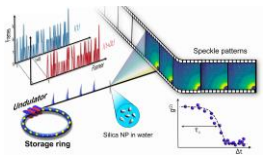
STXM



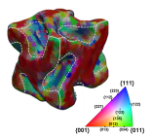
XAFS



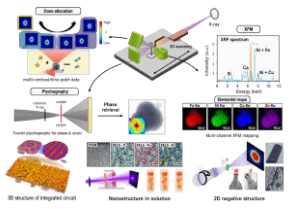
Bio SAXS & NX



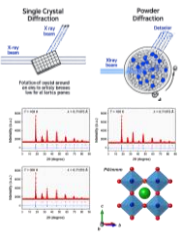
XPCS



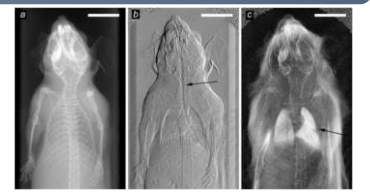
BCDI



Multimodal nanoProbe



HRPD



Full- field
Phase contrast imaging

V. Recent Highlights



Physical AI (Preparation)



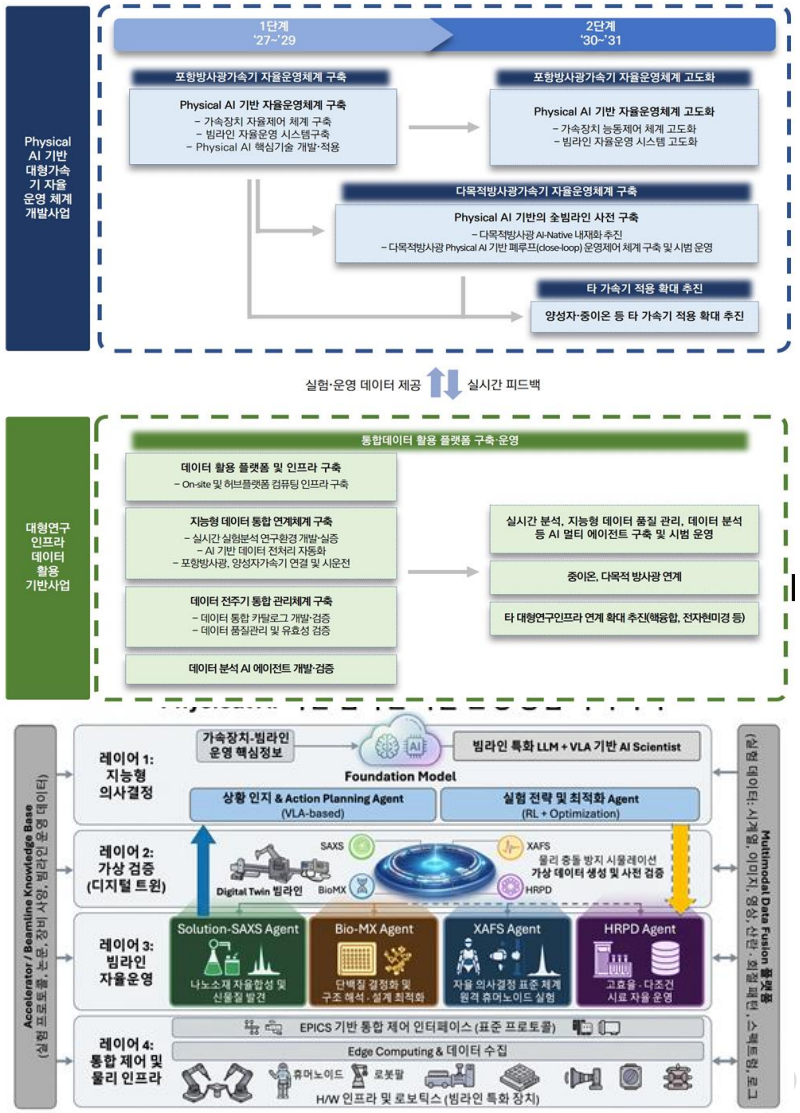
□ Workshop Program

Time	Speaker	Title
09:30 ~ 10:00	**Takaki Hatsui** Director of Control System and Data Infrastructure Group, RIKEN	SPring-8 Data-Center Initiative: Integrating Synchrotron and HPC Ecosystems for the Next Era of Photon Science
10:00 ~ 10:30	**Fazhi Qi** Director of Computing Center, Institute of High Energy Physics	The Scientific Data Infrastructure and Software for HEPS
10:30 ~ 11:00	**Jaehoon Cha** Leader of AI Data Analysis Group, Science and Technology Facilities Council	Advancing Automated Scientific Discovery at Rutherford Appleton Laboratory
11:00 ~ 12:00	Panel: **Takaki Hatsui, Fazhi Qi, Jaehoon Cha** **Seongyeol Kim (PAL-XFEL)** **Seong Hee Park (Korea Univ.)** **Seung-Hwan Shin (Korea-4GSR, KBSI)**	Panel Discussion on Data Science, AI/ML for 4th Generation Photon Sources

*Session Chair: Prof. Seong Hee Park (Korea Univ.)

목 차

	Page
1. 배경 및 AI/AX 필요성	1
1.1 다목적방사광가속기와 데이터	1
1.2 AI/AX 필요성	4
2. 방사광가속기 AI/AX 적용 동향	7
2.1 APS (Advanced Photon Source)	7
2.2 HEPS (High Energy Photon Source)	22
2.3 ALS & SLAC	31
2.4 ESRF & PETRA Ⅲ	37
2.5 NSLS-II	46
2.6 기타 : SPring-8, MAX-IV	52
3. 방사광가속기 AI/AX 적용 전략	57
3.1 AI 적용 영역 분류	57
3.2 빔라인 사이언스 적용 전략	62
3.2.1 신소재/에너지 소재 분석	62
3.2.2 신약 및 바이오	72
3.2.3 결맞음 산란 및 이미징	77
3.3 가속장치 및 X선 광학 적용 전략	89
4. 데이터센터 및 기반 인프라	107
4.1 데이터 폭증과 인프라 필요성	107
4.2 데이터센터 아키텍처 및 흐름	107
4.3 데이터 관리 및 네트워크 인프라	108
4.4 추진 전략	108
5. AI/AX 실행 전략	109
5.1 4세대 방사광가속기 기반 AI/AX 지능형 연구 생태계 구축 로드맵	109
5.2 한국형 데이터 기반 슈퍼연구시설 구축을 위한 단계별 추진 전략	110
6. 기대효과 및 결론	123
6.1 기대효과	123
6.2 결 론	124



Physical AI (Separate Project)

KBSI
Multipurpose Synchrotron Radiation
Construction Project Management Division

AI Foundation Model (Brain)

Main Agent & Workflow Engine

- Natural Language-Based Operational Instructions
- Control Collision Avoidance
- Open LLM / ML-based Data Analysis

Beamline Digital Twin



Accelerator Digital Twin



Digital Twin Platform

physics-informed neural network (PINN) hybrid models for comprehensive pre-verification of system behavior before physical implementation

Accelerator Active Control Sub-Agent

RF EM Diagnostics VAC

AI-based Real-time Experiment/Data Analysis

SAXS BioMX XAFS XRS



Multimodal Data Fusion Platform

integrated DAQ/network platform supporting multi-perspective analysis of time-series, image and log data for AI-based real-time experiment and data analysis

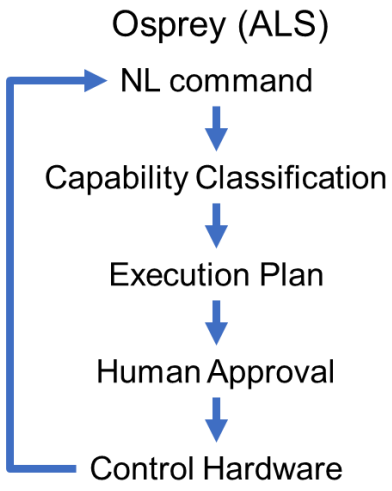


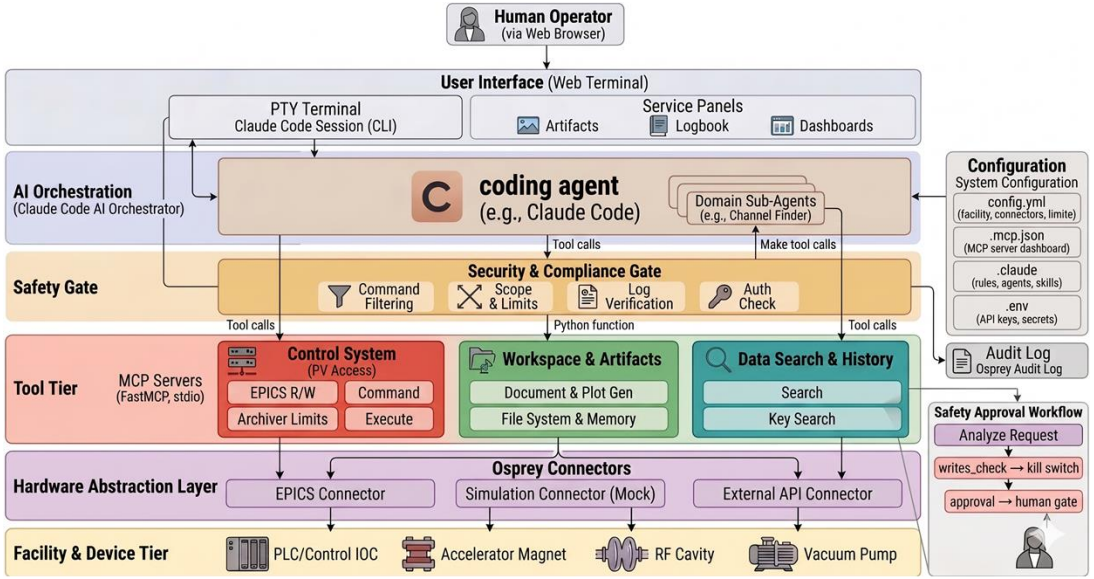
H/W Infrastructure & Control Interfaces

Robot Arms, Humanoids, Seismometer Network, FPGA High-speed Data Acquisition Units, etc.

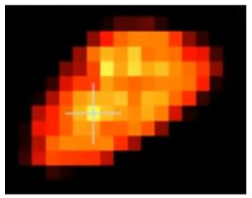
Beyond AI-driven data solutions — towards fully autonomous operation based on Physical AI

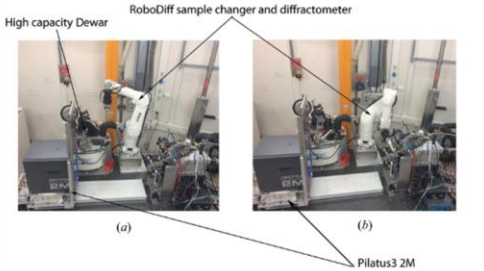
Physical AI (To-Be)

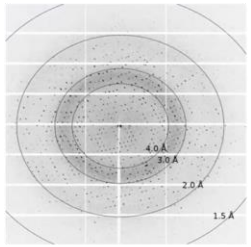


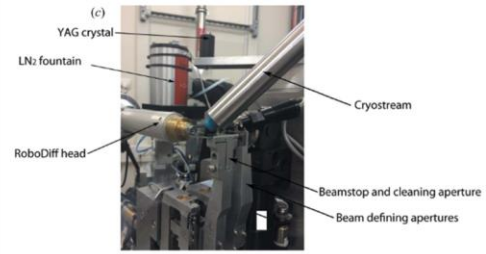


https://als-apg.github.io/osprey/



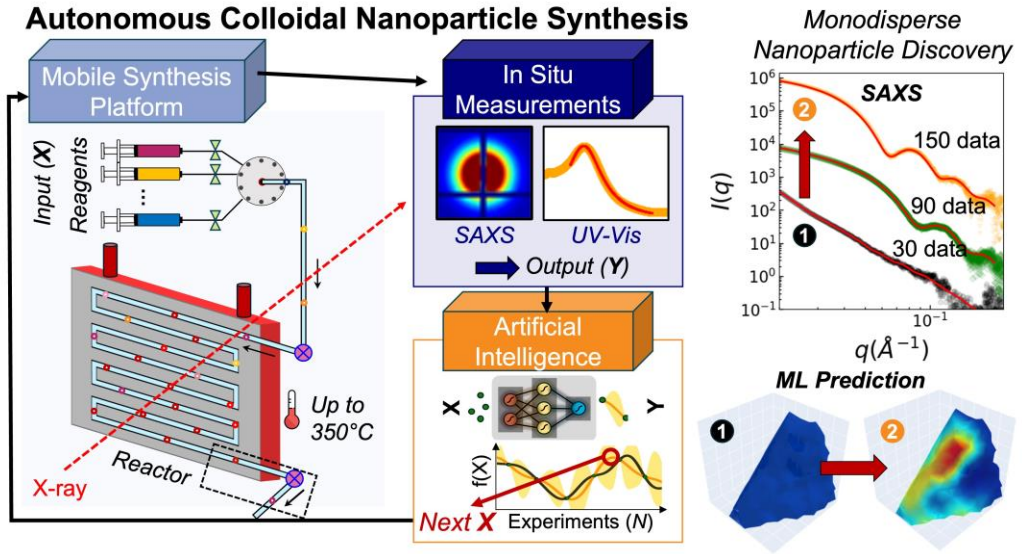




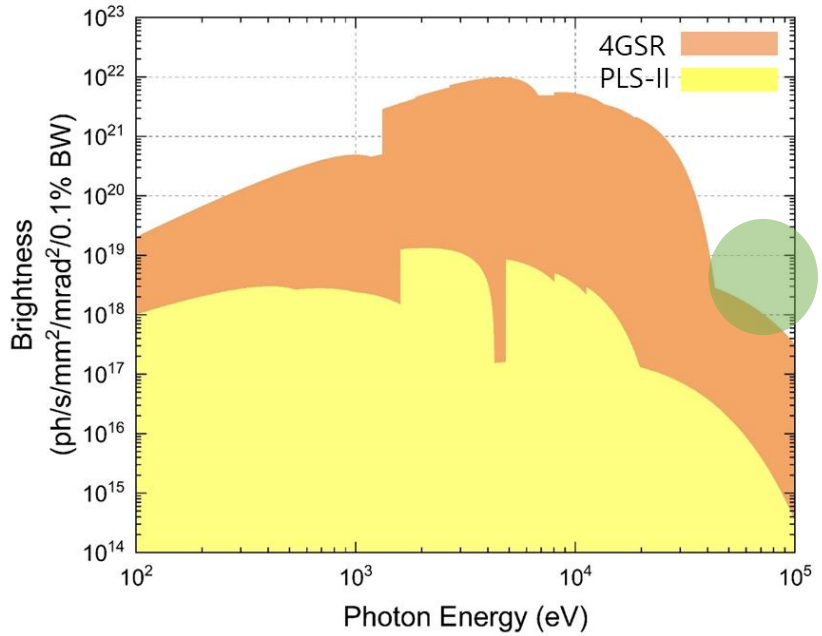


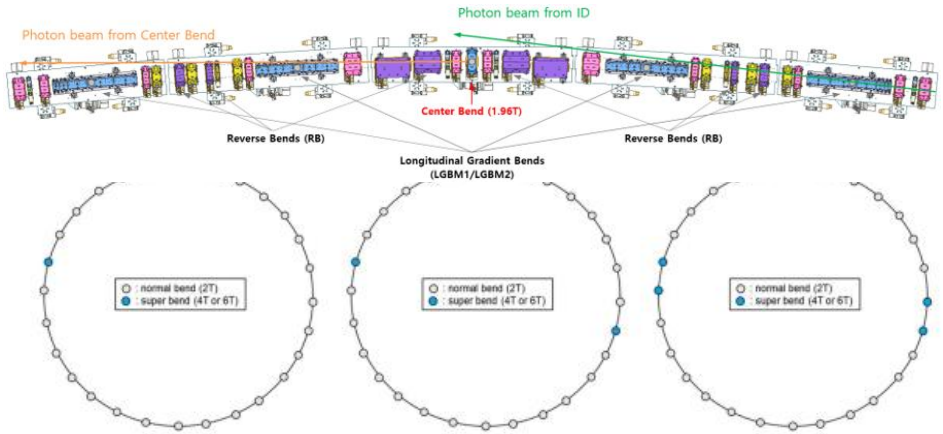
https://www.youtube.com/watch?v=iuTtgbIT_G0

J. Synchrotron Rad. (2015). 22, 1540–1547



HTS Magnet Project for Higher Energy



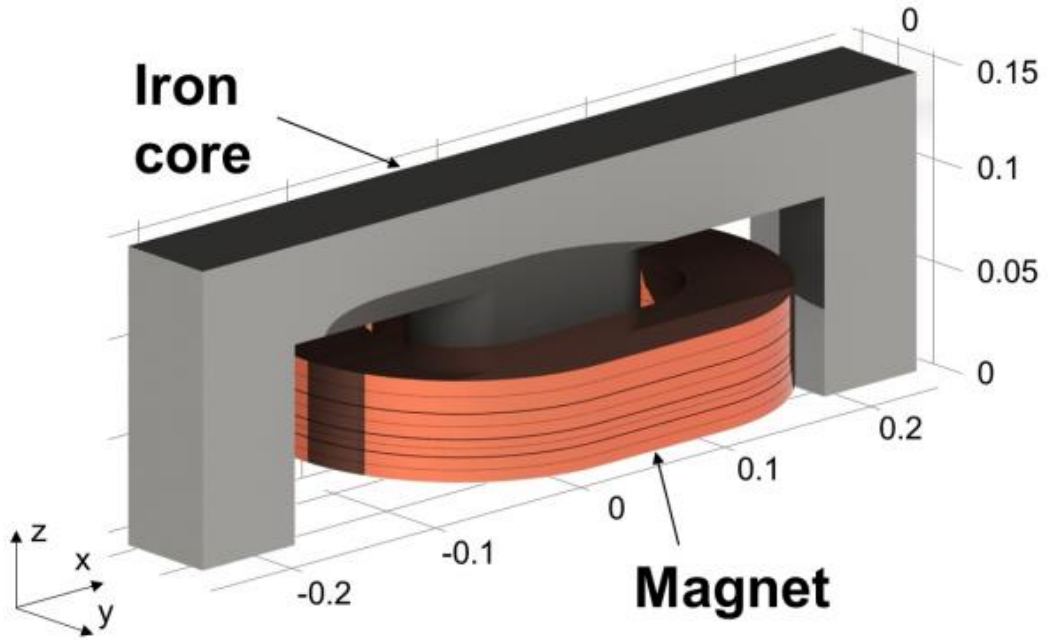


A Feasibility Study on REBCO Superbend Magnet for Korean Fourth-generation Storage Ring

Geonyoung Kim, Jaemin Kim, Jeonghwan Park and Seungyong Hahn*
Department of Electrical and Computer Engineering,
Seoul National University, 1 Gwanak-ro, Gwanak-gu, Seoul 08826, Korea

Jaeyu Lee, Garam Hahn, Taekyun Ha, Dongeon Kim
Pohang Accelerator Laboratory, Pohang University of Science and Technology, Pohang, 37673, Korea

Seunghwan Shin
Korea Basic Science Institute Ochang Center, Ochang-eup, Cheongju, 28119, Korea
(Dated: June 4, 2024)



Science Advisory Meeting

Multipurpose Synchrotron Radiation
Construction Project Management Division

Competitive Differentiation

01 What is demands for the science after 2030?
- Experiment and sample
- Specification

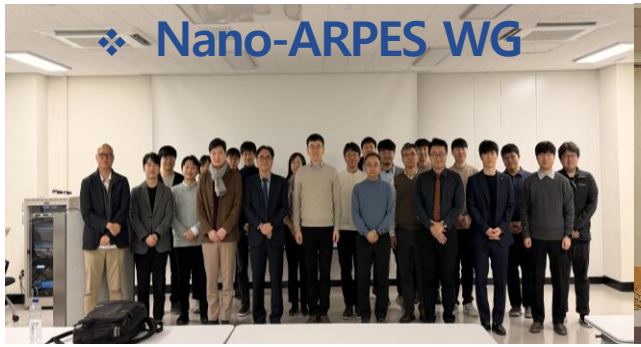
02 What is distinguishable from existing beamline?
- PLS-II & other 3GSR
- Between BLs in K-4GSR

03 What is advantage and benefit from 4GSR?
- Experimental efficiency
- Beyond the current

04 How to compensate present demand and science program?
- Science community



❖ Nano-ARPES WG



❖ Coherent XRD WG



❖ Bio BL WG



❖ Bio BL WG Meeting



Groundbreaking Ceremony

KBSI
Multipurpose Synchrotron Radiation
Construction Project Management Division

① Event Overview

Date & Time	Venue	Attendance	Hosted by	Organized by
Jul. 27, 2026 10:00-11:12	277 Hugi-ri, Ochang-eup (KLS Construction Site	500	MSIT	KBSI


Overall View of the TFS Dome


VIP Reception


Congratulatory Remarks


Progress Briefing



Recognition of Merit


Safety Commitment Declaration





Groundbreaking Ceremony (Touch Button & Ceremonial Shoveling)

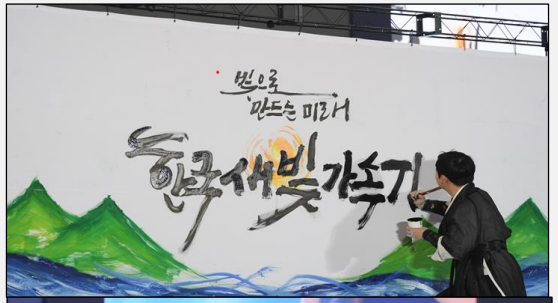

Closing & Commemorative Photo

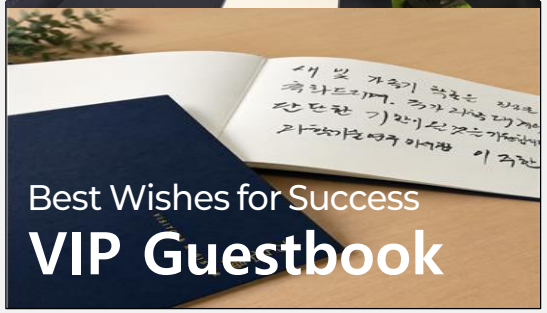
② Attendance













Groundbreaking Ceremony

③ Groundbreaking-Related Events





- Project briefing for 22 science & technology journalists
- Enhanced project understanding and media engagement through Q&A





- 120 participants from industry, academia & government shared the KLS vision
- Promoted research collaboration through expert talks and panel discussions

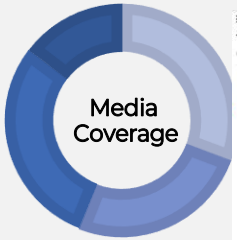
④ Policy & Publicity Outcomes













Media Coverage: 99 Reports

National Media 19 / Regional Media 41 / Online Media 28 / Broadcast 11









Other Publicity: 12 Items

Briefings 2 / Site Visit 1 / Card News 2 / Executive SNS 2 / Outdoor Media 1 / Others 4

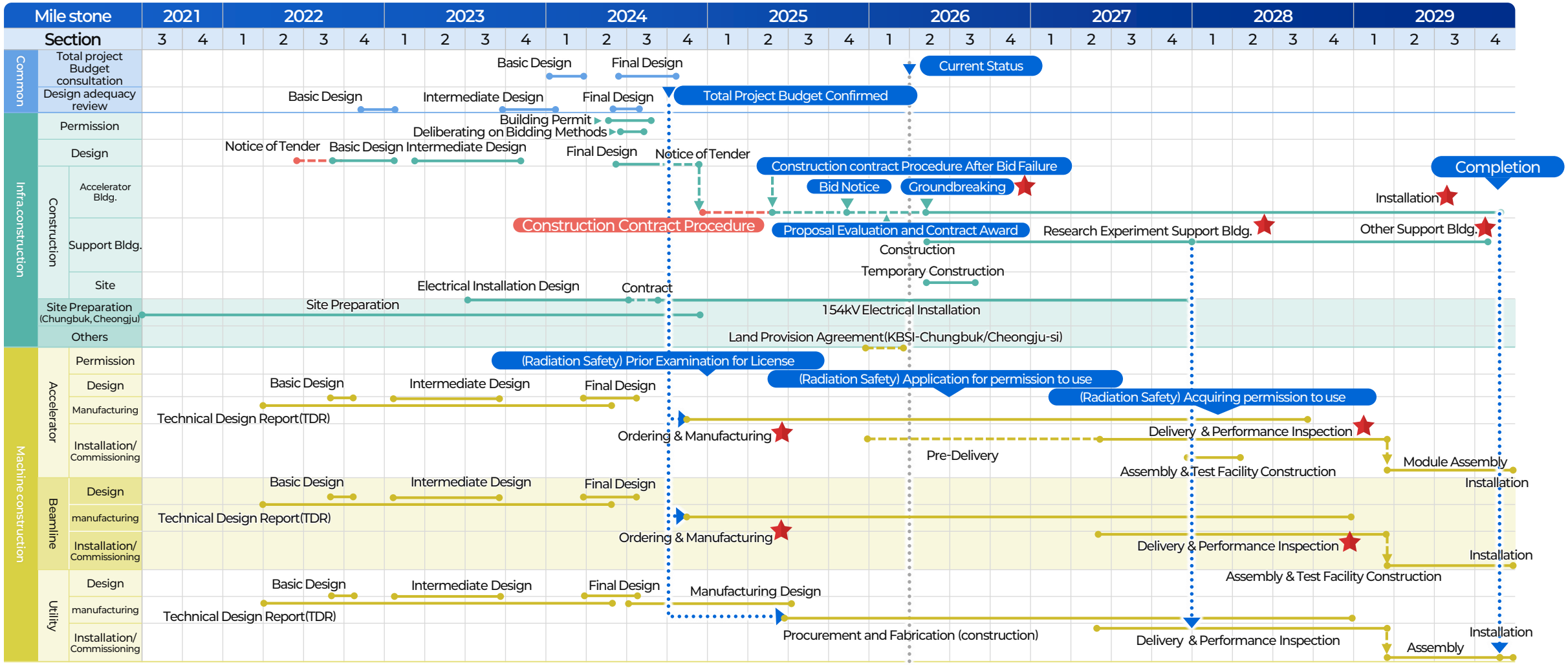
VI. Future Plans



Project Schedule

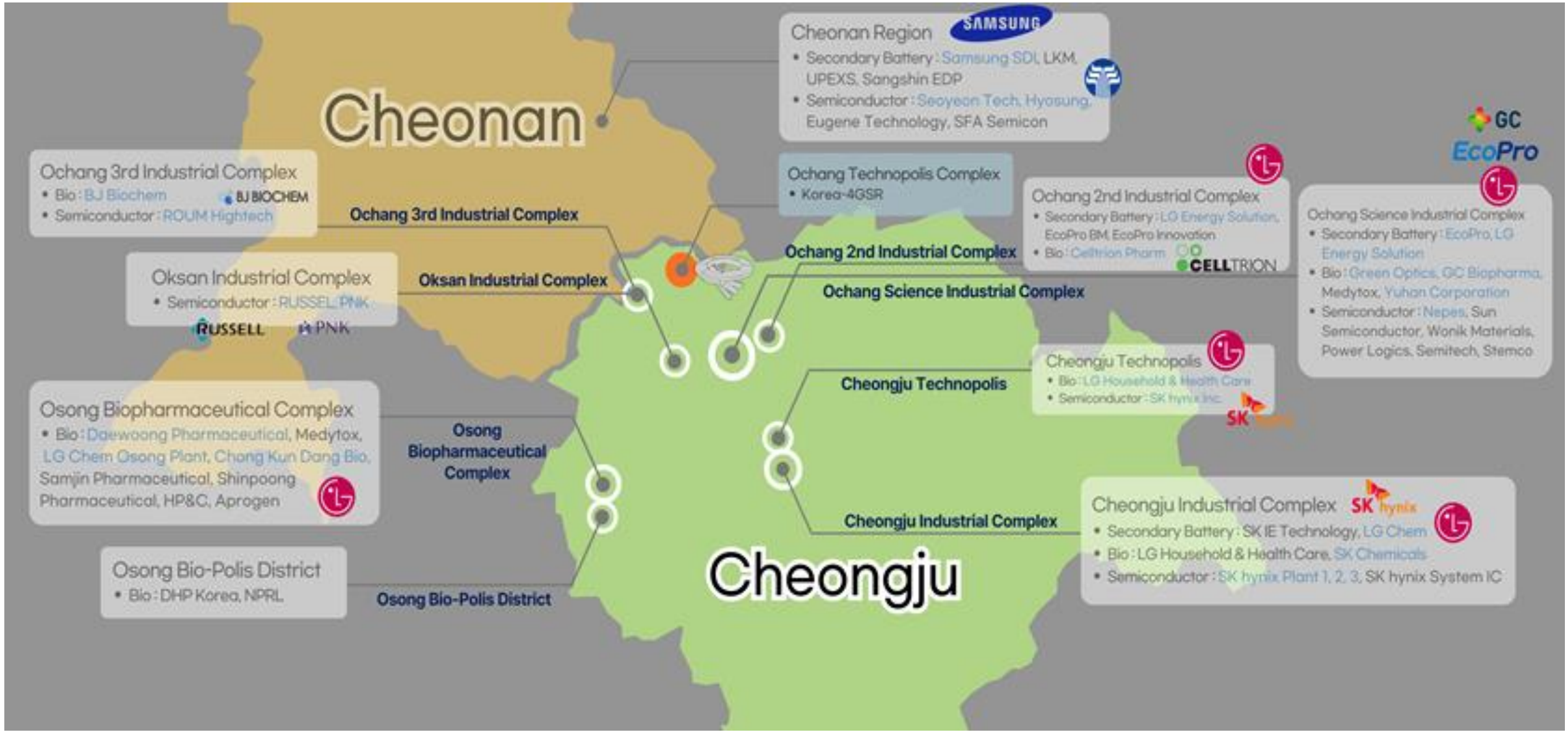
Key Milestones

2026.3.30.



※ Infrastructure and installation schedules are subject to change depending on contractor selection. (This schedule is based on completion of the contractor contract in April 2026, and will be adjusted upon contract award.)
※ The assembly and commissioning schedule for equipment installation will be adjusted and further detailed after selection of the infrastructure contractor

Industrial Applications



Research Center & Science AX Hub

KBSI
Multipurpose Synchrotron Radiation
Construction Project Management Division

기본부지 310,000 m² + 초과부지 230,000 m²







Center for Functional Nanomaterials (BNL)



CXNS NanoLab (DESY)



The Center for Nanoscale Materials (ANL)



Laboratory for BioMolecular Structure (BNL)



Membrane Protein Lab (DLS)



Molecular Foundary Lab (LBNL)



CERN 내부 고밀도 서버 RACK



Prevessin (프랑스) 데이터 센터



NSLS-II 데이터센터

Workforce Expansion



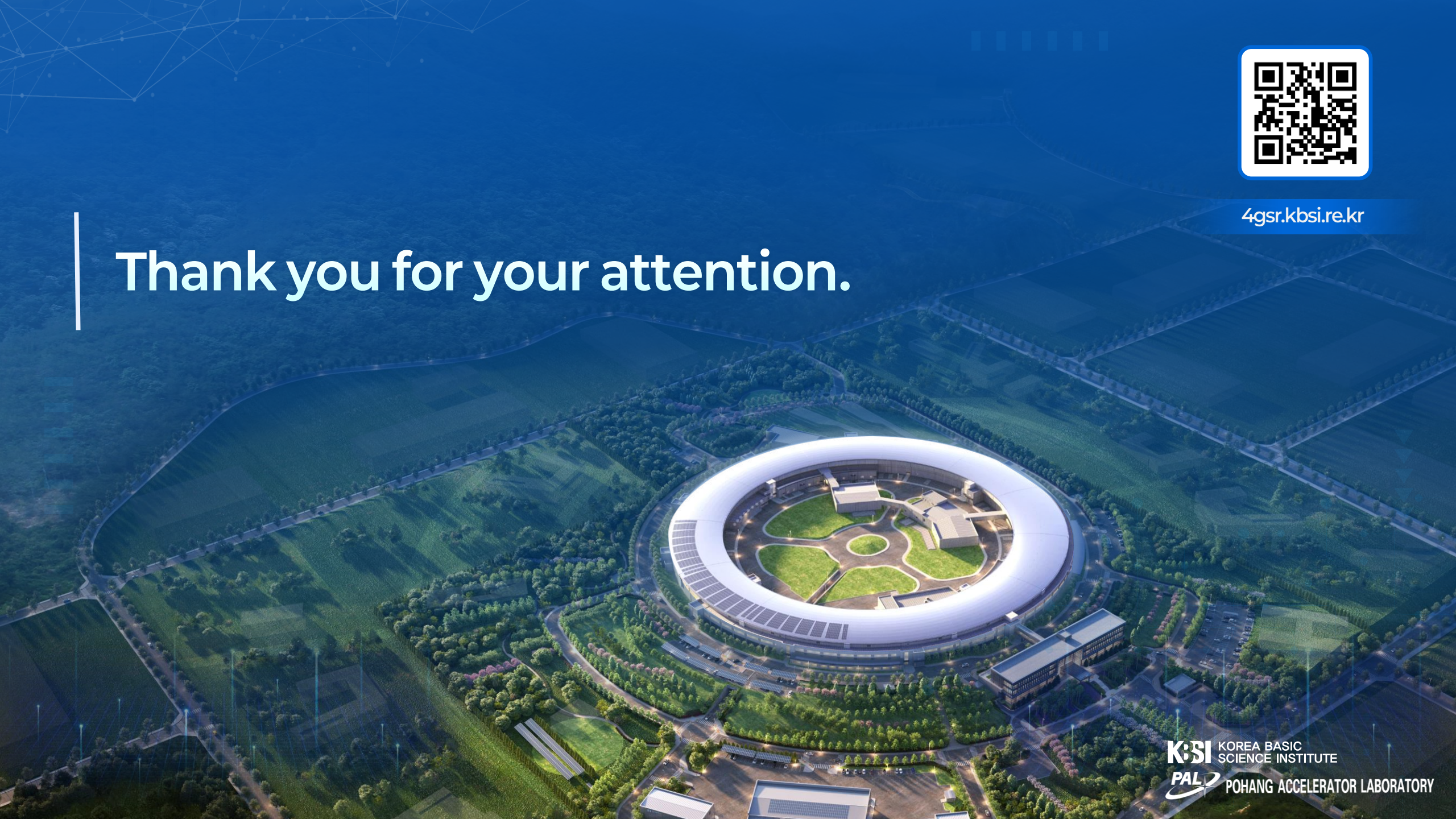






Thank you for your attention.

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KBSI KOREA BASIC SCIENCE INSTITUTE

PAL POHANG ACCELERATOR LABORATORY