

# IPAC26



# IPAC 2026

17th International  
Particle Accelerator Conference

May 17 - 22

Deauville | Normandy | France

## PARTICLE ACCELERATOR PROJECTS AND UPGRADES

GANIL



IPAC26

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# Introduction

For many years, the European Physical Society Accelerator Group (EPS-AG) organizer of the IPAC series in Europe, has continued its tradition of collaborating with leading laboratories worldwide. Each year, these laboratories are invited to share updates on their latest accelerator projects and upgrades, ensuring exhibitors at IPAC commercial exhibitions receive the most current and comprehensive information. This long-standing initiative has produced a valuable series of booklets, accessible both at the conferences and online.

This latest edition reflects the ongoing commitment to excellence, featuring updated contributions from laboratories and research institutes. We extend our sincere gratitude to all contributors for their dedication to strengthening the partnership between research and industry—an effort that remains vital to advancing accelerator science and technology.

Please note that all information in this booklet is provided by the respective laboratories and contact persons and is subject to their confirmation.



**Hanna Frånberg-Delahaye**  
Hanna.franberg@ganil.fr  
CEA/DRF/IRFU-GANIL

# Summary

## EMEA

6

### EUROPE MIDDLE EAST AND AFRICA

IMCC - International Muon Collider Collaboration . . . . .	7
MYRRHA . . . . .	8
Diamond-II . . . . .	9
ESRF-EBS - European Synchrotron Radiation Facility - Extremely Brilliant Source . . . . .	10
NEWGAIN - New Ganil Injector . . . . .	11
PERLE - Powerful Energy Recovery Linac for Experiments . . . . .	12
BESSY III . . . . .	13
BESSY III . . . . .	14
FAIR - Facility for Anti-Proton and Ion Research in Europe . . . . .	15
MESA - Mainz Energy-Recovering Superconducting Accelerator . . . . .	16
ALBA II - Project Upgrade . . . . .	17
IFMIF-DONES - International Fusion Materials Irradiation Facility - DEMO Oriented Neutron Source . . . . .	18
HL-LHC - High-Luminosity Large Hadron Collider project. . . . .	19
CLIC - Compact Linear Collider. . . . .	20
FCC - Future Circular Collider. . . . .	21
SwissFELplus . . . . .	22
ESS - European Spallation Source ERIC . . . . .	23
ESS - European Spallation Source . . . . .	24
CLARA . . . . .	25
CYREN - Cyren Project: Refurbishment of the GANIL Cyclotrons Facility. . . . .	26
SAGA - Space Applications at GANIL Accelerators. . . . .	27
SOLEIL II . . . . .	28

# Summary

## AMERICA 30

Sirius Phase 2 . . . . .	.31
ARIEL - Advanced Rare Isotope Laboratory. . . . .	.32
EIC - Electron-Ion Collider. . . . .	.33
NSLS-IIU - National Synchrotron Light Source II upgrade. . . . .	.34

## ASIA AND AUSTRALASIA 35

CSNS - China Spallation Neutron Source . . . . .	.36
CSNS-II - China Spallation Neutron Source II . . . . .	.38
HIRFL - Heavy Ion Research Facility at Lanzhou. . . . .	.39
HALF - Hefei Advanced Light Facility. . . . .	40
RIBF upgrade project . . . . .	.41
SPring-8-II . . . . .	.42
SPS-II - Siam Photon Source-II . . . . .	.43
SPS-II - Siam Photon Source II . . . . .	.44

# Project Region

## EMEA

Europe Middle East and Africa

IMCC - International Muon Collider Collaboration . . . . .	7
MYRRHA . . . . .	8
Diamond-II . . . . .	9
ESRF-EBS - European Synchrotron Radiation Facility - Extremely Brilliant Source . . . . .	10
NEWGAIN - New Ganil Injector . . . . .	11
PERLE - Powerful Energy Recovery Linac for Experiments . . . . .	12
BESSY III . . . . .	13
BESSY III . . . . .	14
FAIR - Facility for Anti-Proton and Ion Research in Europe . . . . .	15
MESA - Mainz Energy-Recovering Superconducting Accelerator . . . . .	16
ALBA II - Project Upgrade . . . . .	17
IFMIF-DONES - International Fusion Materials Irradiation Facility - DEMO Oriented Neutron Source . . . . .	18
HL-LHC - High-Luminosity Large Hadron Collider project . . . . .	19
CLIC - Compact Linear Collider . . . . .	20
FCC - Future Circular Collider . . . . .	21
SwissFELplus . . . . .	22
ESS - European Spallation Source ERIC . . . . .	23
ESS - European Spallation Source . . . . .	24
CLARA . . . . .	25
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SOLEIL II . . . . .	28



# IMCC

## - International Muon Collider Collaboration

<b>Project Location</b>	CERN is hosting the international collaboration with participants from all regions
Project Type	Update
Project Description	The collaboration develops the design of a muon collider, a novel concept to extend the energy range of particle physics. This effort includes technology development and will require demonstrator facilities.
Requirements List Available	Yes
Approval Date	
Status of Contracting	We are in the initial R&D phase
Construction scheduled to start	Not defined, demonstrator by 2030
Estimated Project Cost	The current budget is in the order of 5 million EUR/year and could ramp up to a total project cost in the order of 10 Billion EUR range.
Estimated Construction Duration	The project is a long-term development
Type of Equipment to be Purchased	RF equipment, HTS magnets, power converter, ...

<b>Project Leader(s)</b>	Daniel Schulte
Affiliation	CERN
e-mail	daniel.schulte@cern.ch

<b>Contact Person(s)</b>	Daniel Schulte / Muon Collider Secretariat
Affiliation	CERN
e-mail	daniel.schulte@cern.ch / muon.collider.secretariat@cern.ch

# MYRRHA

<b>Project Location</b>	Belgium, Antwerp, Mol
Project Type	Update
Project Description	MYRRHA is designed as an Accelerator Driven System. In a first step towards a 600 MeV super-conducting linac, a 100 MeV proton linac will be constructed (until 2031). A connected proton target facility will serve for radioisotope production.
Requirements List Available	Yes
Approval Date	09/07/2018
Status of Contracting	Approximately 35% of the items have been contracted.
Construction scheduled to start	01/11/2024
Estimated Project Cost	650 MEURO
Estimated Construction Duration	13 years
Type of Equipment to be Purchased	100 MeV proton linac consisting of a 17 MeV injector with 15 copper CH-cavities followed by a superconducting linac with 60 single spoke cavities. A proton target station is foreseen.

<b>Project Leader(s)</b>	Hamid Ait Abderrahim (General Director)
Affiliation	Myrrha aisbl/ivzw
e-mail	hamid.ait.abderrahim@myrrha.be

<b>Contact Person(s)</b>	Adrian Fabich (Institute Director MINERVA Design & Build)
Affiliation	SCK CEN Belgian Nuclear Research Centre
e-mail	adrian.fabich@sckcen.be

# Diamond-II

<b>Project Location</b>	Oxfordshire, England
Project Type	Update
Project Description	Upgrade of the Diamond Light Source, involving replacing the booster synchrotron and the storage ring.
Requirements List Available	Yes
Approval Date	06/07/2023
Status of Contracting	70
Construction scheduled to start	01/12/2027
Estimated Project Cost	200 MEUR
Estimated Construction Duration	1
Type of Equipment to be Purchased	Cabling, Magnets, Insertion Devices, Mechanical Engineering, Piping, Power Supplies, RF, Vacuum vessels and instrumentation,

<b>Project Leader(s)</b>	Richard P. Walker
Affiliation	Diamond Light Source Ltd.
e-mail	richard.walker@diamond.ac.uk

<b>Contact Person(s)</b>	Richard P. Walker
Affiliation	Diamond Light Source Ltd.
e-mail	richard.walker@diamond.ac.uk

# ESRF-EBS

## - European Synchrotron Radiation Facility - Extremely Brilliant Source

<b>Project Location</b>	France, Isère, Grenoble
<b>Project Type</b>	Update
<b>Project Description</b>	The Extremely Brilliant Source (EBS) at the European Synchrotron Radiation Facility is the world's first high-energy fourth-generation synchrotron light source, completed in 2020. By replacing the original double-bend achromat lattice with a hybrid 7-bend achromat (H7BA) design, the upgrade reduced the electron beam emittance to about 135 pm-rad and increased X-ray brilliance and coherence by up to two orders of magnitude. The ESRF-EBS provides extremely stable and intense X-ray beams that enable advanced characterization of materials, devices, and processes at the micro- and nanoscale, supporting applications in sectors such as energy, microelectronics, pharmaceuticals, advanced manufacturing, and cultural heritage. Industrial partners can access dedicated beamtime, collaborative research programs, and technical support through ESRF's industry services; further information and contacts are available via the ESRF Industry Relations Office (industry@esrf.fr) or through the ESRF website (www.esrf.fr).
<b>Requirements List Available</b>	Yes
<b>Approval Date</b>	
<b>Status of Contracting</b>	The facility is operational now.
<b>Construction scheduled to start</b>	2015: EBS construction program started; 2015–2018: component design, procurement, and fabrication; Dec 2018: start of shutdown and installation in the tunnel; Dec 2019: accelerator commissioning began; Aug 2020: start of user operation
<b>Estimated Project Cost</b>	158 M euro, for the upgrade of EBS storage ring
<b>Estimated Construction Duration</b>	12 months for dismounting and installation, 8 months for commissioning
<b>Type of Equipment to be Purchased</b>	RF power source, permanent magnet, vacuum chambers, power supplies, etc.

<b>Project Leader(s)</b>	Pantaleo Raimondi
<b>Affiliation</b>	ESRF (2012-2020), CERN (now)
<b>e-mail</b>	pantaleo.raimondi@cern.ch

<b>Contact Person(s)</b>	Qing Qin
<b>Affiliation</b>	ESRF
<b>e-mail</b>	qing.qin@esrf.fr

# NEWGAIN - New Ganil Injector

<b>Project Location</b>	France
<b>Project Type</b>	New
<b>Project Description</b>	The NEWGAIN project stands as a landmark of industrial and scientific synergy, centered on the construction of a state-of-the-art Radio Frequency Quadrupole (RFQ) and a superconducting ECR ion source. These critical components, developed in close collaboration with specialized industrial partners, are engineered to provide unprecedented beam intensities for the SPIRAL2 linear accelerator at GANIL. The manufacturing of the RFQ requires extreme mechanical precision to ensure optimal particle bunching and acceleration, while the superconducting source leverages advanced cryogenic technologies to produce high-charge state ions from oxygen to uranium. By entrusting these high-spec developments to industry leaders, NEWGAIN ensures a level of technical reliability and performance that meets the rigorous demands of international nuclear research. This industrial-scale infrastructure not only pushes the boundaries of beam physics but also reinforces the transfer of high-tech expertise between public research laboratories and the private sector
<b>Requirements List Available</b>	Yes
<b>Approval Date</b>	01/10/2021
<b>Status of Contracting</b>	90%
<b>Construction scheduled to start</b>	05/01/2026
<b>Estimated Project Cost</b>	20 000 000
<b>Estimated Construction Duration</b>	6,5 years
<b>Type of Equipment to be Purchased</b>	RF equipment, power supplies, magnetics, cryogenerators, vacuum systems, diagnostics

<b>Project Leader(s)</b>	Chautard Frederic
<b>Affiliation</b>	GANIL
<b>e-mail</b>	chautard@ganil.fr

<b>Contact Person(s)</b>	Chautard Frédéric
<b>Affiliation</b>	GANIL
<b>e-mail</b>	chautard@ganil.fr

# PERLE

## - Powerful Energy Recovery Linac for Experiments

<b>Project Location</b>	France, Orsay
<b>Project Type</b>	New
<b>Project Description</b>	PERLE is a 3-turn, high beam current (20 mA) Energy Recovery Linac (ERL). It will be the first ERL at the power regime of 5 MW, paving the way for future large facilities aiming to use this concept. The design phase is quite over, and the electron source is now installed and is under commissioning. The entire injection line is scheduled for end 2028. The main cryomodule is also under construction and foreseen for 2029. An intermediate phase of PERLE 1- turn is foreseen fall 2029.
<b>Requirements List Available</b>	Yes
<b>Approval Date</b>	
<b>Status of Contracting</b>	
<b>Construction scheduled to start</b>	The construction started partially (the electron source is now available). the other systems are ongoing and some of them not yet started.
<b>Estimated Project Cost</b>	30 M€
<b>Estimated Construction Duration</b>	4 years for the phase PERLE 1-turn, and 2-3 more to upgrade to PERLE 3-turn.
<b>Type of Equipment to be Purchased</b>	RF power sources, RF equipment, magnets, power supplies, diagnostics, SRF equipments, vacuum equipments...

<b>Project Leader(s)</b>	Walid Kaabi
<b>Affiliation</b>	IJCLab-CNRS
<b>e-mail</b>	walid.kaabi@ijclab.in2p3.fr

<b>Contact Person(s)</b>	Walid Kaabi
<b>Affiliation</b>	IJCLab-CNRS
<b>e-mail</b>	walid.kaabi@ijclab.in2p3.fr

**BESSY III**

<b>Project Location</b>	Berlin, Germany
Project Type	New
Project Description	andreas.jankowiak@helmholtz-berlin.de
Requirements List Available	No
Approval Date	
Status of Contracting	
Construction scheduled to start	2030
Estimated Project Cost	1200 Mio
Estimated Construction Duration	
Type of Equipment to be Purchased	RF equipment, power supplies, magnetics, ...

<b>Project Leader(s)</b>	Renske van der Veen
Affiliation	Helmholtz Zentrum Berlin fuer Materialien und Energie
e-mail	renske.vanderveen@helmholtz-berlin.de

<b>Contact Person(s)</b>	Andreas Jankowiak
Affiliation	Helmholtz Zentrum Berlin fuer Materialien und Energie
e-mail	andreas.jankowiak@helmholtz-berlin.de

# BESSY III

<b>Project Location</b>	Berlin, Germany
<b>Project Type</b>	New
<b>Project Description</b>	Project is in the planning phase. At present a CDR is under development and will be followed by a TDR phase.
<b>Requirements List Available</b>	No
<b>Approval Date</b>	31/07/2030
<b>Status of Contracting</b>	0%
<b>Construction scheduled to start</b>	2031
<b>Estimated Project Cost</b>	1,200 Mio Euro
<b>Estimated Construction Duration</b>	5 years
<b>Type of Equipment to be Purchased</b>	Linac and storage ring accelerating structures, related RF sources, electron source, girder and magnet systems (mainly PM magnets for dipoles and quadrupoles), NEG coated low aperture vacuum system, vacuum pumps and gauges, power supplies, beam diagnostic and feedback systems, out of vacuum / in vacuum undulators, beamline equipment

<b>Project Leader(s)</b>	Scientific Project Head: Renske van der Veen, Technical Project Head: Andreas Jankowiak
<b>Affiliation</b>	Helmholtz-Zentrum Berlin für Materialien und Energie
<b>e-mail</b>	renskvanderveen@helmholtz-berlin.de, andreas.jankowiak@helmholtz-berlin.de

<b>Contact Person(s)</b>	Markus Sauerborn
<b>Affiliation</b>	Helmholtz-Zentrum Berlin für Materialien und Energie
<b>e-mail</b>	markus.sauerborn@helmholtz-berlin.de

# FAIR

## - Facility for Anti-Proton and Ion Research in Europe

<b>Project Location</b>	Germany, Hessen, Darmstadt
<b>Project Type</b>	Update
<b>Project Description</b>	Currently the international accelerator facility FAIR, one of the largest research projects worldwide, is being built in Darmstadt, Germany. The construction site opened in July 2017, the accelerator installation started in January 2024 and the Commissioning activities in August 2025. As of early 2026, all procurement, installation and commissioning activities are converging towards the completion of the First Science configuration of the FAIR facility by the end of 2028. For more information: <a href="https://fair-center.eu">https://fair-center.eu</a>
<b>Requirements List Available</b>	Yes
<b>Approval Date</b>	04/10/2010
<b>Status of Contracting</b>	80%
<b>Construction scheduled to start</b>	04/07/2017
<b>Estimated Project Cost</b>	3,3 bn EURO
<b>Estimated Construction Duration</b>	11 years
<b>Type of Equipment to be Purchased</b>	vacuum components, beam instrumentation, power supplies, magnets

<b>Project Leader(s)</b>	Joerg Blaurock (FAIR Technical Managing Director)
<b>Affiliation</b>	FAIR GmbH / GSI GmbH
<b>e-mail</b>	j.blaurock@gsi.de

<b>Contact Person(s)</b>	Emmanuel Rosi (Head of FAIR Project Management Office)
<b>Affiliation</b>	FAIR GmbH / GSI GmbH
<b>e-mail</b>	e.rosi@gsi.de

# MESA

## - Mainz Energy-Recovering Superconducting Accelerator

<b>Project Location</b>	Federal Republic of Germany, Rhineland Palatinate, Mainz
Project Type	Update
Project Description	Preaccelerator in commissioning phase, Main accelerator in assembly.
Requirements List Available	No
Approval Date	01/01/2012
Status of Contracting	95%
Construction scheduled to start	2021
Estimated Project Cost	25.000.000
Estimated Construction Duration	5
Type of Equipment to be Purchased	superconducting RF, transmitters, magnets, power supplies, vacuum components, electronics

<b>Project Leader(s)</b>	Kurt Aulenbacher
Affiliation	Institut für Kernphysik, Universität Mainz
e-mail	aulenbac@uni-mainz.de

<b>Contact Person(s)</b>	Timo Stengler
Affiliation	Institut für Kernphysik, Universität Mainz
e-mail	stengler@kph.uni-mainz.de

# ALBA II

## - Project Upgrade

<b>Project Location</b>	Barcelona, Spain
Project Type	Update
Project Description	Upgrade of the ALBA Storage Ring, of the Beamlines, construction of 3 new beamlines and adjacent buildings ( <a href="https://www.cells.es/en/about/alba-ii">https://www.cells.es/en/about/alba-ii</a> ).
Requirements List Available	Yes
Approval Date	01/01/2026
Status of Contracting	5%, only prototypes and one beamline have been tendered.
Construction scheduled to start	2026
Estimated Project Cost	160 ME
Estimated Construction Duration	6 years
Type of Equipment to be Purchased	Magnets, Vacuum, Girders, RF, Electronics, Cabling, Cooling, Beamlines, Buildings.

<b>Project Leader(s)</b>	Francis Perez
Affiliation	ALBA Synchrotron - CELLS
e-mail	francis@cells.es

<b>Contact Person(s)</b>	Francis Perez
Affiliation	ALBA Synchrotron - CELLS
e-mail	francis@cells.es

# IFMIF-DONES

## - International Fusion Materials Irradiation Facility- DEMO Oriented Neutron Source

<b>Project Location</b>	Spain, Granada, Escúzar
<b>Project Type</b>	New
<b>Project Description</b>	IFMIF-DONES is a fusion-like neutron source for nuclear fusion materials research generated by the interaction between an accelerated deuteron beam and a liquid lithium target. The deuteron accelerator will be a 175 MHz, 125 mA CW, 40 MeV superconducting RF linac.
<b>Requirements List Available</b>	Yes
<b>Approval Date</b>	16/03/2023
<b>Status of Contracting</b>	40%
<b>Construction scheduled to start</b>	Second half of 2026 for Civil Works. Already started for Machine components.
<b>Estimated Project Cost</b>	700M
<b>Estimated Construction Duration</b>	8
<b>Type of Equipment to be Purchased</b>	Deuteron CW ion sources, fast chopper, beam transport line elements (dipoles, quadrupoles, steerers, octupoles, dodecapoles), beam interceptive elements (scrapers, collimators, beam dump), SSPA RF Power Systems, LLRF, power converters, beam diagnostics (current transformers, BPM's, beam loss monitors, FPM's, IPM's, microloss monitors), vacuum components, control systems (including timing systems, machine protection and safety), cryomodules, scHWR cavities, sc solenoids, IH bunching cavities, lithium loop elements, conventional equipment, cryogenics, remote handling equipment, radiation shieldings, radiation area detectors, infrastructure

<b>Project Leader(s)</b>	Moisés Weber
<b>Affiliation</b>	IFMIF-DONES España
<b>e-mail</b>	moises.weber@ifmif-dones.es

<b>Contact Person(s)</b>	Moisés Weber
<b>Affiliation</b>	IFMIF-DONES España
<b>e-mail</b>	moises.weber@ifmif-dones.es

# HL-LHC

## - High-Luminosity Large Hadron Collider project

<b>Project Location</b>	Switzerland, Geneva, Geneva
<b>Project Type</b>	Update
<b>Project Description</b>	<p>The High-Luminosity Large Hadron Collider (HL-LHC) project is a major upgrade to the current Large Hadron Collider (LHC). It aims to crank up the performance of the LHC in order to increase the potential for discoveries after 2030. The objective is to increase the integrated luminosity by a factor of 10 beyond the LHC's design value, making it possible to detect rare events not previously witnessed, and increase our understanding of the energy frontier. This upgrade is at the heart of the HL-LHC project and hinges on a number of innovative technologies, including a combination of cutting-edge Nb-Ti and Nb3Sn superconducting magnets, compact and ultraprecise superconducting radio-frequency cavities for beam rotation, as well as 100-m-long, high-power superconducting links with zero energy dissipation. In addition, the higher luminosities will impose unprecedented demands on powering, vacuum, cryogenics and machine protection, and will require new concepts for collimation and diagnostics, advanced modelling for the intense beams and novel schemes of beam crossing to maximize the physics output of the collisions. Following the approval of HL-LHC as priority project in the EU Strategy Report for High Energy Physics and the approval of its budget by CERN Council, this major upgrade is now in full swing of implementation together with its companion upgrade programmes of the LHC detectors (ALICE, ATLAS, CMS and LHCb).</p>
<b>Requirements List Available</b>	Yes
<b>Approval Date</b>	01/12/2016
<b>Status of Contracting</b>	95
<b>Construction scheduled to start</b>	The production of all key components is already ongoing in industry. Deployment of the HL-LHC project in the LHC tunnel will start at the end of June 2026.
<b>Estimated Project Cost</b>	1300 MEUR
<b>Estimated Construction Duration</b>	4 years
<b>Type of Equipment to be Purchased</b>	RF equipment (cavities), power supplies, superconducting magnets (NbTi and Nb3Sn), superconducting links (MgB2), electronics, cryogenic refrigeration and distribution systems, software, beam intercepting devices

<b>Project Leader(s)</b>	Markus Zerlauth
<b>Affiliation</b>	CERN, Geneva, Switzerland
<b>e-mail</b>	markus.zerlauth@cern.ch

<b>Contact Person(s)</b>	Hector Garcia Gavela
<b>Affiliation</b>	CERN, Geneva, Switzerland
<b>e-mail</b>	hector.garcia.gavela@cern.ch

# CLIC

## - Compact Linear Collider

<b>Project Location</b>	Switzerland, Geneva
Project Type	Update
Project Description	Linear Collider using compact 12 GHz high gradient X-band RF technology and a high intensity L-band drivebeam to provide the RF power
Requirements List Available	Yes
Approval Date	01/01/2033
Status of Contracting	2%
Construction scheduled to start	2035-36
Estimated Project Cost	9 MEURO for initial phase
Estimated Construction Duration	8 years
Type of Equipment to be Purchased	RF structures, distribution and power, magnets, vacuum equipment, instrumentation, alignment and support structures

<b>Project Leader(s)</b>	Steinar Stapnes
Affiliation	CERN and University of Oslo
e-mail	steinar.stapnes@cern.ch

<b>Contact Person(s)</b>	Steinar Stapnes
Affiliation	CERN and University of Oslo
e-mail	steinar.stapnes@cern.ch

# FCC

## - Future Circular Collider

<b>Project Location</b>	France and Switzerland, Geneva
<b>Project Type</b>	Update
<b>Project Description</b>	The proposed Future Circular Collider (FCC) integrated programme consists of two stages: An electron–positron collider serving as a highest-luminosity Higgs-boson, electroweak and top-quark factory, followed by a proton–proton collider with a collision energy around 100 TeV. In 2021, the CERN Council launched the FCC Feasibility Study. This study covered, inter alia, physics objectives and potential, geology, civil engineering, technical infrastructure, territorial implementation, environmental aspects, R&D needs for the accelerators and detectors, socio-economic benefits, and cost. The Feasibility Study was completed on 31 March 2025. The Feasibility Study Report was published in three volumes. Most relevant is volume 2: <a href="https://link.springer.com/article/10.1140/epjs/s11734-025-01967-4">https://link.springer.com/article/10.1140/epjs/s11734-025-01967-4</a>
<b>Requirements List Available</b>	Yes
<b>Approval Date</b>	01/09/2028
<b>Status of Contracting</b>	Consulting contracts, civil engineering, territorial implementation, environmental studies
<b>Construction scheduled to start</b>	10/2033
<b>Estimated Project Cost</b>	15 BEUR
<b>Estimated Construction Duration</b>	10 years
<b>Type of Equipment to be Purchased</b>	Cooling & ventilation, electrical power distribution, safety systems, all accelerator technologies

<b>Project Leader(s)</b>	Michael Benedikt
<b>Affiliation</b>	CERN
<b>e-mail</b>	michael.benedikt@cern.ch

<b>Contact Person(s)</b>	Jean-Paul Burnet
<b>Affiliation</b>	CERN
<b>e-mail</b>	jean-paul.burnet@cern.ch

# SwissFELplus

<b>Project Location</b>	Switzerland, Argovia, Villigen
Project Type	Update
Project Description	Targeted upgrade of SwissFEL to fulfill various science targets.
Requirements List Available	No
Approval Date	12/12/2028
Status of Contracting	∅
Construction scheduled to start	01/2029
Estimated Project Cost	55M EUR
Estimated Construction Duration	4 years
Type of Equipment to be Purchased	RF equipment, magnets, power supplies, beamline components, superconducting undulators, X-ray optics, spectrometers etc.

<b>Project Leader(s)</b>	Christoph Bostedt, Thomas Schietinger
Affiliation	Paul Scherrer Institute
e-mail	thomas.schietinger@psi.ch

<b>Contact Person(s)</b>	thomas.schietinger@psi.ch
Affiliation	Paul Scherrer Institute
e-mail	thomas.schietinger@psi.ch

# ESS

## - European Spallation Source ERIC

<b>Project Location</b>	Sweden, Skåne, Lund
Project Type	Update
Project Description	Construction, testing and commissioning of a 5 MW long-pulse neutron spallation source with 15 scientific instruments.
Requirements List Available	Yes
Approval Date	28/05/2009
Status of Contracting	99%
Construction scheduled to start	2014
Estimated Project Cost	3.4 B EUR (in-year)
Estimated Construction Duration	14 years
Type of Equipment to be Purchased	RF equipment, neutron scattering instrument equipment

<b>Project Leader(s)</b>	Helmut Schober, Director General; Andrew Kimber, Project Director; Camille Ginsburg, Operations and Machine Director; Giovanna Fragneto, Science Director; Vjeko Begic, Engineering and Infrastructure Director; Anders Ihr, Administration Director
Affiliation	European Spallation Source ERIC
e-mail	helmut.schober@ess.eu; andrew.kimber@ess.eu; camille.ginsburg@ess.eu; giovanna.fragneto@ess.eu; vjeko.begic@ess.eu; anders.ihr@ess.eu

<b>Contact Person(s)</b>	Camille Ginsburg
Affiliation	European Spallation Source ERIC
e-mail	camille.ginsburg@ess.eu

# ESS

## - European Spallation Source

<b>Project Location</b>	Lund, Sweden
<b>Project Type</b>	Update
<b>Project Description</b>	<p>The European Spallation Source (ESS) is a multidisciplinary research facility where neutrons will be used to probe the structure and behaviour of a wide range of materials down to the atomic level. It will welcome around 2 000 researchers per year, from around the world, to carry out experiments over the full range of natural and engineering sciences, including topics related to energy, health and environment. ESS is under construction in Lund, southern Sweden, with its Data Management and Scientific Computing centre located at the Technical University of Denmark, just outside Copenhagen. The facility is owned by 13 European countries and is being built with extensive in-kind contributions from over 100 European laboratories, standing as a solid example of international collaboration. As one of the largest science and technology infrastructure projects being built today, and with an official user programme scheduled to start in 2028, ESS has the ambition of becoming the world's most impactful accelerator-based neutron source. The facility design and construction include in its final stage the most powerful linear proton accelerator ever built. At the start of the user programme, a suite of 14 state-of-the-art neutron instruments will be available. This suite will continuously expand over the years to increase both capability and capacity. ESS users will be able to count on a range of support laboratories and a fully developed data pipeline from formulating proposals to planning experiments and analysing the data. Information on ESS procurement can be found here: <a href="https://ess.eu/doing-business-ess">https://ess.eu/doing-business-ess</a> Link to the ESS e-tendering tool: <a href="https://kommersannons.se/ess/">https://kommersannons.se/ess/</a></p>
<b>Requirements List Available</b>	Yes
<b>Approval Date</b>	28/05/2009
<b>Status of Contracting</b>	For the accelerator, in terms of project construction scope, this has been 100% contracted via in-kind contributions and cash procurements.
<b>Construction scheduled to start</b>	09/10/2014
<b>Estimated Project Cost</b>	Approximately 3.5 B EUR
<b>Estimated Construction Duration</b>	Approximately 13 years
<b>Type of Equipment to be Purchased</b>	Although the accelerator project scope is fully contracted, additional operational equipment and spares, such as klystrons, tetrodes, power supplies, vacuum systems, etc. will be required to ensure sustained machine operation and high reliability.
<b>Project Leader(s)</b>	ESS Director General - Helmut Schober, ESS Project Director - Andrew Kimber
<b>Affiliation</b>	ESS
<b>e-mail</b>	helmut.schober@ess.eu andrew.kimber@ess.eu
<b>Contact Person(s)</b>	ESS Project: Andrew Kimber; ESS Accelerator: Ciprian Plostinar
<b>Affiliation</b>	ESS
<b>e-mail</b>	andrew.kimber@ess.eu; ciprian.plostinar@ess.eu

# CLARA

<b>Project Location</b>	United Kingdom
<b>Project Type</b>	Update
<b>Project Description</b>	<p>The CLARA is a proposed FEL Test Facility, being built at STFC's Daresbury Laboratory. The project has been broken down into three phases so that progress can be made with beam commissioning of the first sections of CLARA (Phase 1) while the full accelerator section without FEL and dedicated beam line to transport beam to shielded user beam line (Phase 2) components are procured and assembled offline, Phase 3 is currently on hold pending to decisions on future XFEL facility and straight on space is reserved for this. In 2024, CLARA Phase 2 built has been completed and RF conditioning of cavities started. CLARA reached design specifications of 250 MeV beam energy, 250 pC bunch charge and operation at 100 Hz repetition rate in 2025. Beam has been transported through a dedicated full energy beam exploitation beam line (FEBE) in a shielded experimental hutch through to the final beam dump. Site Acceptance Test of the 120 TW laser laser was completed end of 2025. CLARA delivered beam for range of friendly user experiments from January-April 2026 (without FEBE laser); this will be reported in contributed talk at IPAC26 on Tuesday. After completion of these experiments, FEBE laser transport in the hutch will be installed and commissioned starting May 2026. First friendly user experiment combining electron beam and high power laser is anticipated in Autumn 2026. The planned transition of CLARA to open call user facility is currently on hold due to transformation programme underway in STFC.</p>
<b>Requirements List Available</b>	No
<b>Approval Date</b>	
<b>Status of Contracting</b>	
<b>Construction scheduled to start</b>	01/04/2015
<b>Estimated Project Cost</b>	65ME
<b>Estimated Construction Duration</b>	11 years
<b>Type of Equipment to be Purchased</b>	Vacuum components, beam diagnostics, RF spares, optics for laser transport etc

<b>Project Leader(s)</b>	Dr Deepa Angal-Kalinin
<b>Affiliation</b>	UKRI, STFC Daresbury Laboratory
<b>e-mail</b>	deepa.angal-kalinin@stfc.ac.uk

<b>Contact Person(s)</b>	Dr Deepa Angal-Kalinin
<b>Affiliation</b>	UKRI, STFC Daresbury Laboratory
<b>e-mail</b>	deepa.angal-kalinin@stfc.ac.uk

# CYREN

## - Cyren Project: Refurbishment of the GANIL Cyclotrons Facility

<b>Project Location</b>	FRANCE, Caen
Project Type	Update
Project Description	Refurbishment of the GANIL cyclotrons facility including 5 cyclotrons, beam lines, the associated experimental caves, building infrastructures, technical utilities and the safety, security and radiation protection systems
Requirements List Available	Yes
Approval Date	01/06/2026
Status of Contracting	20%
Construction scheduled to start	07/09/2026
Estimated Project Cost	not to be given
Estimated Construction Duration	5 years
Type of Equipment to be Purchased	power supplies, cooling systems, radioprotection beacons, RF equipment, command-control system, building renovation,, high voltage distribution equipments, network infrastructure equipments...

<b>Project Leader(s)</b>	Pascal ANGER
Affiliation	GANIL
e-mail	pascal.anger@ganil.fr

<b>Contact Person(s)</b>	Pascal ANGER
Affiliation	GANIL
e-mail	pascal.anger@ganil.fr

# SAGA

## - Space Applications at GANIL Accelerators

<b>Project Location</b>	Caen
Project Type	New
Project Description	The SAGA project aims to enhance existing capabilities and develop new radiation testing capabilities for components to serve industrial and academic clients, primarily in the space sector, while improving technical support services.
Requirements List Available	No
Approval Date	
Status of Contracting	
Construction scheduled to start	01/06/2025
Estimated Project Cost	22 M EUR
Estimated Construction Duration	6 years
Type of Equipment to be Purchased	Magnetics, power supplies, vacuum systems, vacuums chambers, beam diagnostics, mechanical setups

<b>Project Leader(s)</b>	Pierre-Emmanuel BERNAUDIN
Affiliation	GANIL
e-mail	bernaudin@ganil.fr

<b>Contact Person(s)</b>	Eloïse DESSAY
Affiliation	GANIL
e-mail	eloise.dessay@ganil.fr

## SOLEIL II

Project Location	France
Project Type	Update
Project Description	<p>SOLEIL II is the French upgrade project designed to deliver next-generation synchrotron radiation through a profound renewal of the accelerator complex, the upgrade of 29 beamlines and three laboratories, and a major IT transformation. The compact 2.75 GeV Storage Ring (354 m) will provide the highest brilliance in its class, targeting a 50 pm-rad emittance in a round-beam configuration. Innovations and technology are pushed in most of the domains (extensive use of permanent magnets, including quadrupoles, nearly 100% NEG coating, 12 mm diameter chamber in the arcs, a next-generation in-vacuum nonlinear kicker for transparent top-up, a new design of 4th harmonic cavities, 10 µm alignment for the strong field magnets...). The Storage Ring is built on an atypical 4BA-7BA lattice, the new low-emittance Booster uses a 14 HOA lattice. Both lattices are now frozen, enabling the shift from design to construction. SOLEIL II will demonstrate an outstanding performance: 100-fold increase of the coherent flux, 9 orders of magnitude of energy range, 10,000 faster experiments, nanoscale resolution enabling in operado study and multimodal experiments. This contribution reports how the prototype phase enables us to build confidence in reaching the performance target. First-year progress, including the new project organization, advances in collimation studies to control loss, and mitigation strategies to address key technical risks. Major prototypes have been launched in magnets, vacuum systems, alignment, insertion devices, and controls. Building upgrades and refreshments have started to meet project requirements. The first large calls for tender are being issued in 2026 and 2027, and an updated timeline is presented as SOLEIL II enters its construction phase (2025-2030), with objectives to optimize costs, ensure environmental compliance, and reduce the energy footprint (80% water savings, 50% electricity savings). The second upgrade phase (2031-2035) will focus on completely modernizing 19 beamlines and their supporting laboratories, as well as the IT infrastructure and instrumentation R&amp;D program. Contact persons: Project Leader amor.nadji@synchrotron-soleil.fr   Accelerator Program laurent.nadolski@synchrotron-soleil.fr Webpage : <a href="https://www.synchrotron-soleil.fr/en/soleil-ii-building-tomorrows-synchrotron-today">https://www.synchrotron-soleil.fr/en/soleil-ii-building-tomorrows-synchrotron-today</a></p>
Requirements List Available	Yes
Approval Date	01/06/2025
Status of Contracting	15%
Construction scheduled to start	01/01/2025
Estimated Project Cost	309 M€
Estimated Construction Duration	6 years (stage 1)
Type of Equipment to be Purchased	All equipment for updating and constructing a new storage ring and booster ring: magnet, vacuum systems, front-ends, girders, diagnostics, power supplies, alignment and magnetic measurements, pulsed magnets, PSS systems, shielding, services.

**SOLEIL II**

<b>Project Leader(s)</b>	Amor NADJI
Affiliation	Synchrotron SOLEIL
e-mail	amor.nadji@synchrotron-soleil.fr

<b>Contact Person(s)</b>	Laurent S. NADOLSKI
Affiliation	Synchrotron SOLEIL
e-mail	laurent.nadolski@synchrotron-soleil.fr

# Project Region

# AMERICA

Sirius Phase 2 . . . . .	31
ARIEL - Advanced Rare Isotope Laboratory. . . . .	32
EIC - Electron-Ion Collider. . . . .	33
NSLS-IIU - National Synchrotron Light Source II upgrade. . . . .	34



## Sirius Phase 2

<b>Project Location</b>	BRAZIL, São Paulo, Campinas
Project Type	Update
Project Description	Sirius Phase 2 foresees the construction of 10 beamlines and the installation of 3rd harmonic RF cavity
Requirements List Available	No
Approval Date	01/08/2025
Status of Contracting	90
Construction scheduled to start	2028
Estimated Project Cost	130.000.000
Estimated Construction Duration	3 years
Type of Equipment to be Purchased	RF equipment, undulators, vacuum components, optical components, hutches

<b>Project Leader(s)</b>	Antonio Jose Roque da Silva, Harry Westfahl Junior
Affiliation	CNPEM
e-mail	westfahl@lnls.br

<b>Contact Person(s)</b>	Harry Westfahl Junior
Affiliation	CNPEM
e-mail	westfahl@lnls.br

# ARIEL

## - Advanced Rare Isotope Laboratory

<b>Project Location</b>	Canada, British Columbia, Vancouver
<b>Project Type</b>	Update
<b>Project Description</b>	<p>ARIEL-II is the second stage of the rare isotope beam (RIB) production at TRIUMF. The first stage, ARIEL-I, funded in 2010 delivered the ARIEL building and a super-conducting cw-electron linear accelerator, designed to deliver 10mA electron beams at 50MeV. An initial stage is operational to deliver beams at 30MeV. The second stage, ARIEL-II, will increase the scientific productivity by exploiting the new electron accelerator in terms of final beam power (10 mA at 30 MeV) and reliability to produce a wider variety of exotic isotope species at higher intensities and to deliver multiple beams in parallel. The project comprises a new target station for an intense 100 kW electron beam using photo fission for rare isotope production, a new proton beam line for a 100 <math>\mu</math>A proton beam from the existing 520 MeV cyclotron to a new isotope production proton target station in the ARIEL building. In addition, ARIEL-II comprises about 200 m of RIB transport beam line and a new beam preparation and charge breeding system CANREB, which has been completed. The ARIEL-I SRF e-linac completion to its design specifications, the new driver beam transport lines and the new high-power target stations for the electron and proton beams are presently under construction.</p>
<b>Requirements List Available</b>	Yes
<b>Approval Date</b>	01/09/2017
<b>Status of Contracting</b>	75%
<b>Construction scheduled to start</b>	2017
<b>Estimated Project Cost</b>	50
<b>Estimated Construction Duration</b>	10 years
<b>Type of Equipment to be Purchased</b>	RF, power supplies, vacuum systems, magnets, chemical lab infrastructure, shielding material, controls electronics (EPICS), etc.

<b>Project Leader(s)</b>	Dr. Alexander Gottberg
<b>Affiliation</b>	TRIUMF
<b>e-mail</b>	gottberg@triumf.ca

<b>Contact Person(s)</b>	Cherishma Sadasivuni
<b>Affiliation</b>	TRIUMF
<b>e-mail</b>	csadasivuni@triumf.ca

# EIC

## - Electron-Ion Collider

<b>Project Location</b>	USA, Brookhaven National Lab
Project Type	New
Project Description	<a href="https://www.bnl.gov/eic/">https://www.bnl.gov/eic/</a>
Requirements List Available	Yes
Approval Date	01/01/2027
Status of Contracting	5%
Construction scheduled to start	Mid 2027
Estimated Project Cost	3B USD
Estimated Construction Duration	10 years
Type of Equipment to be Purchased	RF systems, Vacuum systems, power supplies, magnets, instruments, detectors, cables, control systems

<b>Project Leader(s)</b>	Jim Yeck
Affiliation	BNL
e-mail	jyeck@bnl.gov

<b>Contact Person(s)</b>	Luisella Lari
Affiliation	BNL
e-mail	llari@bnl.gov

# NSLS-IIU

## - National Synchrotron Light Source II upgrade

<b>Project Location</b>	Upton, NY, USA
Project Type	Update
Project Description	Upgrade of NSLS-II is foreseen as replacement of the existing storage ring and several instruments with the upgraded systems. Project is at the conceptual stage.
Requirements List Available	Yes
Approval Date	
Status of Contracting	N/A
Construction scheduled to start	N/A
Estimated Project Cost	~1B EUR
Estimated Construction Duration	8 years
Type of Equipment to be Purchased	Magnets, power supplies, diagnostics, vacuum, controls, IDs

<b>Project Leader(s)</b>	Timur Shaftan
Affiliation	NSLS-II, BNL
e-mail	shaftan@bnl.gov

<b>Contact Person(s)</b>	Timur Shaftan
Affiliation	NSLS-II, BNL
e-mail	shaftan@bnl.gov

Project Region

# ASIA and AUSTRALASIA



CSNS - China Spallation Neutron Source . . . . .	.36
CSNS-II - China Spallation Neutron Source II . . . . .	.38
HIRFL - Heavy Ion Research Facility at Lanzhou . . . . .	.39
HALF - Hefei Advanced Light Facility. . . . .	40
RIBF upgrade project . . . . .	.41
SPring-8-II . . . . .	.42
SPS-II - Siam Photon Source-II . . . . .	.43
SPS-II - Siam Photon Source II . . . . .	.44

# CSNS

## - China Spallation Neutron Source

<b>Project Location</b>	Dongguan, Guangdong, China
<b>Project Type</b>	Update
<b>Project Description</b>	<p>CSNS serves as an advanced interdisciplinary platform for fundamental and applied research, supporting scientific exploration in materials science, life sciences, environmental studies, new energy technologies, and advanced manufacturing. CSNS consist of an 80 MeV negative hydrogen ion linear accelerator, a 1.6 GeV fast-cycling proton synchrotron, and a target station. The accelerated high-energy proton beam bombards the tungsten target, causing a spallation reaction and producing a large number of neutrons. The generated high-energy neutrons are then slowed down by moderators and transported to the neutron spectrometer at the end through the neutron guide. CSNS is built and operated by the Institute of High Energy Physics (IHEP), the Chinese Academy of Sciences (CAS). The first phase of CSNS construction began in September 2011 and was completed on August 23, 2018. At present, CSNS has built 11 spectrometers, including diffractometers, reflectometer, small-angle scattering spectrometers, neutron imaging spectrometer, inelastic scattering spectrometers, etc. CSNS has served a lot of user experiments, including lithium-ion battery materials, solar cell structures, rare-earth magnetism, high-temperature superconductors, functional films, high-strength alloys, and chip single-particle effects, etc. In December 2022, the National Development and Reform Commission approved the CSNS Phase II project. During the Phase II project, 1 muon spectrometer and 9 new neutron instruments will be built, including cold neutron inelastic spectrometers, backscattering spectrometers, single-crystal diffractometers, diffuse scattering spectrometers, etc. At the same time, the accelerator power will be increased to 500 kW. The Phase II project will be finished by June 2029. More information can be get from the following website. (<a href="https://user.csns.ihep.ac.cn">https://user.csns.ihep.ac.cn</a>)</p>
<b>Requirements List Available</b>	Yes
<b>Approval Date</b>	09/01/2024
<b>Status of Contracting</b>	40%
<b>Construction scheduled to start</b>	09/01/2024
<b>Estimated Project Cost</b>	300,000,000 EUR
<b>Estimated Construction Duration</b>	2029/9/30
<b>Type of Equipment to be Purchased</b>	neutron detectors, neutron guide, SC cavity

## CSNS - China Spallation Neutron Source

<b>Project Leader(s)</b>	Sheng Wang
Affiliation	Institute of High Energy Physics, CAS
e-mail	wangs@ihep.ac.cn

<b>Contact Person(s)</b>	Xiao Li
Affiliation	Institute of High Energy Physics, CAS
e-mail	lixiao@ihep.ac.cn

# CSNS-II

## - China Spallation Neutron Source II

<b>Project Location</b>	China,GuangDong province,Dong Guan city
Project Type	Update
Project Description	The CSNS-II project mainly involves the construction of 11 new neutron spectrometers and experimental terminals, increasing the beam power of the accelerator and target station from 100 to 500kW, equipping advanced experimental support facilities, and expanding the civil engineering and general facilities.
Requirements List Available	Yes
Approval Date	26/12/2022
Status of Contracting	80%
Construction scheduled to start	09/01/2024
Estimated Project Cost	364,340,206
Estimated Construction Duration	5 years
Type of Equipment to be Purchased	RF equipment, power supplies, magnetics, etc

<b>Project Leader(s)</b>	Sheng Wang
Affiliation	Institute of High Energy Physics of the Chinese Academy of Sciences
e-mail	wangs@ihep.ac.cn

<b>Contact Person(s)</b>	Yansheng Geng
Affiliation	Institute of High Energy Physics of the Chinese Academy of Sciences
e-mail	gengys@ihep.ac.cn

# HIRFL

## - Heavy Ion Research Facility at Lanzhou

<b>Project Location</b>	Lanzhou, China
<b>Project Type</b>	Update
<b>Project Description</b>	The Heavy Ion Research Facility at Lanzhou (HIRFL) is a national laboratory hosted by the Institute of Modern Physics (IMP) in China. The scientific missions of HIRFL are to make fundamental discoveries on the nuclear physics, atomic physics, irradiative material science, biology physics and improve technologies on heavy ion accelerators. The HIRFL accelerator facility mainly consists of ECR ion sources, a Sector Focusing Cyclotron (SFC), a Separated Sector Cyclotron (SSC) and two cooling storage rings (CSRm and CSRe). The upgrade project of the HIRFL facility is to increase beam power. The main task is to increase the operation frequency of the CSRm storage ring. A new magnetic alloy RF cavity with the maximum voltage of 50 kV will be used. A titanium alloy-lined thin-walled vacuum chamber will be used in the dipoles. A new power supply system for dipoles and quadrupoles will be developed to satisfy the fast magnetic field ramping rate of 3T/s.
<b>Requirements List Available</b>	Yes
<b>Approval Date</b>	30/06/2026
<b>Status of Contracting</b>	40%
<b>Construction scheduled to start</b>	01/09/2026
<b>Estimated Project Cost</b>	1.2 M
<b>Estimated Construction Duration</b>	2 years
<b>Type of Equipment to be Purchased</b>	power supplies and vacuum system

<b>Project Leader(s)</b>	Yang Jiancheng
<b>Affiliation</b>	Institute of Modern Physics, Chinese Academy of Sciences
<b>e-mail</b>	yangjch@impcas.ac.cn

<b>Contact Person(s)</b>	Mao Lijun
<b>Affiliation</b>	Institute of Modern Physics, Chinese Academy of Sciences
<b>e-mail</b>	maolijun@impcas.ac.cn

# HALF

## - Hefei Advanced Light Facility

<b>Project Location</b>	P. R. China, Anhui, Hefei
Project Type	New
Project Description	2.2 GeV Diffraction Limited Synchrotron Radiation Light Source, <a href="http://en.nslr.ustc.edu.cn/2025/0930/c39895a703294/page.htm">http://en.nslr.ustc.edu.cn/2025/0930/c39895a703294/page.htm</a>
Requirements List Available	Yes
Approval Date	07/06/2023
Status of Contracting	90%
Construction scheduled to start	07/06/2023
Estimated Project Cost	340M EUR
Estimated Construction Duration	5.3 years
Type of Equipment to be Purchased	Optics, detectors, RF equipments

<b>Project Leader(s)</b>	Donglai Feng
Affiliation	University of Science and Technology of China
e-mail	dlfeng@ustc.edu.cn

<b>Contact Person(s)</b>	Qin Yu
Affiliation	University of Science and Technology of China
e-mail	yuqin@ustc.edu.cn

# RIBF upgrade project

<b>Project Location</b>	Wako, Saitama, Japan
Project Type	Update
Project Description	kamigait@riken.jp
Requirements List Available	Yes
Approval Date	
Status of Contracting	
Construction scheduled to start	FY2027
Estimated Project Cost	54M
Estimated Construction Duration	8 years
Type of Equipment to be Purchased	Magnets, power supplies, rf amplifiers, vacuum system, beam diagnostics, and high-power beam dump

<b>Project Leader(s)</b>	Hiroyoshi SAKURAI
Affiliation	RIKEN Nishina Center
e-mail	sakurai@ribf.riken.jp

<b>Contact Person(s)</b>	Osamu KAMIGAITO
Affiliation	RIKEN Nishina Center
e-mail	kamigait@riken.jp

# SPring-8-II

<b>Project Location</b>	Japan, Hyogo
Project Type	Update
Project Description	Next generation ring-based light source
Requirements List Available	Yes
Approval Date	
Status of Contracting	90
Construction scheduled to start	08/2027
Estimated Project Cost	191 M EUR
Estimated Construction Duration	1 year and half, including commissioning
Type of Equipment to be Purchased	Most of needed equipments already contracted

<b>Project Leader(s)</b>	Tetsuya Ishikawa
Affiliation	RIKEN SPring-8 Center
e-mail	ishikawa@spring8.or.jp

<b>Contact Person(s)</b>	Takahiro Watanabe
Affiliation	JASRI (Japan Synchrotron Radiation Research Institute)
e-mail	twatanabe@spring8.or.jp

## SPS-II

### - Siam Photon Source-II

<b>Project Location</b>	Thailand, Nakhon Ratchasima and Mueang Nakhon Ratchasima
<b>Project Type</b>	New
<b>Project Description</b>	Siam Photon Source II (SPS-II) is a 4th generation synchrotron light source currently under development in Thailand. Featuring a 3.0 GeV electron beam energy and a 327.6 m circumference, the facility utilizes a Double-Triple Bend Achromat (DTBA) lattice to achieve sub-nanometer natural emittance. The DTBA configuration was specifically selected for its superior "productivity"—optimizing the ratio of straight-section length to total circumference. This 14-cell storage ring provides 14 long and 14 short straight sections, to accommodate insertion devices and essential machine subsystems. The combination of a 270 MeV linear accelerator and a 3.0 GeV concentric booster synchrotron works as the beam injector. Seven Phase-1 photon beamlines will provide users with high-intensity photon beams with energy ranging from 80 eV to 60 keV.
<b>Requirements List Available</b>	Yes
<b>Approval Date</b>	02/12/2025
<b>Status of Contracting</b>	
<b>Construction scheduled to start</b>	2028
<b>Estimated Project Cost</b>	269.85 M
<b>Estimated Construction Duration</b>	7 years
<b>Type of Equipment to be Purchased</b>	RF system, Power supplies, Beam Position Monitor

<b>Project Leader(s)</b>	Dr. Prapong Klysubun
<b>Affiliation</b>	Synchrotron Light Research Institute
<b>e-mail</b>	porntip@slri.or.th

<b>Contact Person(s)</b>	Miss Porntip Sudmuang
<b>Affiliation</b>	Synchrotron Light Research Institute
<b>e-mail</b>	porntip@slri.or.th

# SPS-II

## - Siam Photon Source II

<b>Project Location</b>	Thailand, Rayong province
Project Type	New
Project Description	4th generation 3 GeV synchrotron light source
Requirements List Available	Yes
Approval Date	02/12/2025
Status of Contracting	
Construction scheduled to start	Late 2027 - Early 2028
Estimated Project Cost	430 M
Estimated Construction Duration	6 years
Type of Equipment to be Purchased	RF system (cavities, solid-state amplifiers, LLRF), magnet power supplies, booster magnets, vacuum system, beam diagnostics and instrumentation

<b>Project Leader(s)</b>	Prapong Klysubun
Affiliation	Synchrotron Light Research Institute (SLRI)
e-mail	pklysubun@slri.or.th

<b>Contact Person(s)</b>	Wasupol Rungtanapirom
Affiliation	Synchrotron Light Research Institute (SLRI)
e-mail	wasupol@slri.or.th

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