中国科学院高能物理研究所
Institute of High Energy Physics
Chinese Academy of Sciences

CEPC IARC/IAC Reports and Implementations

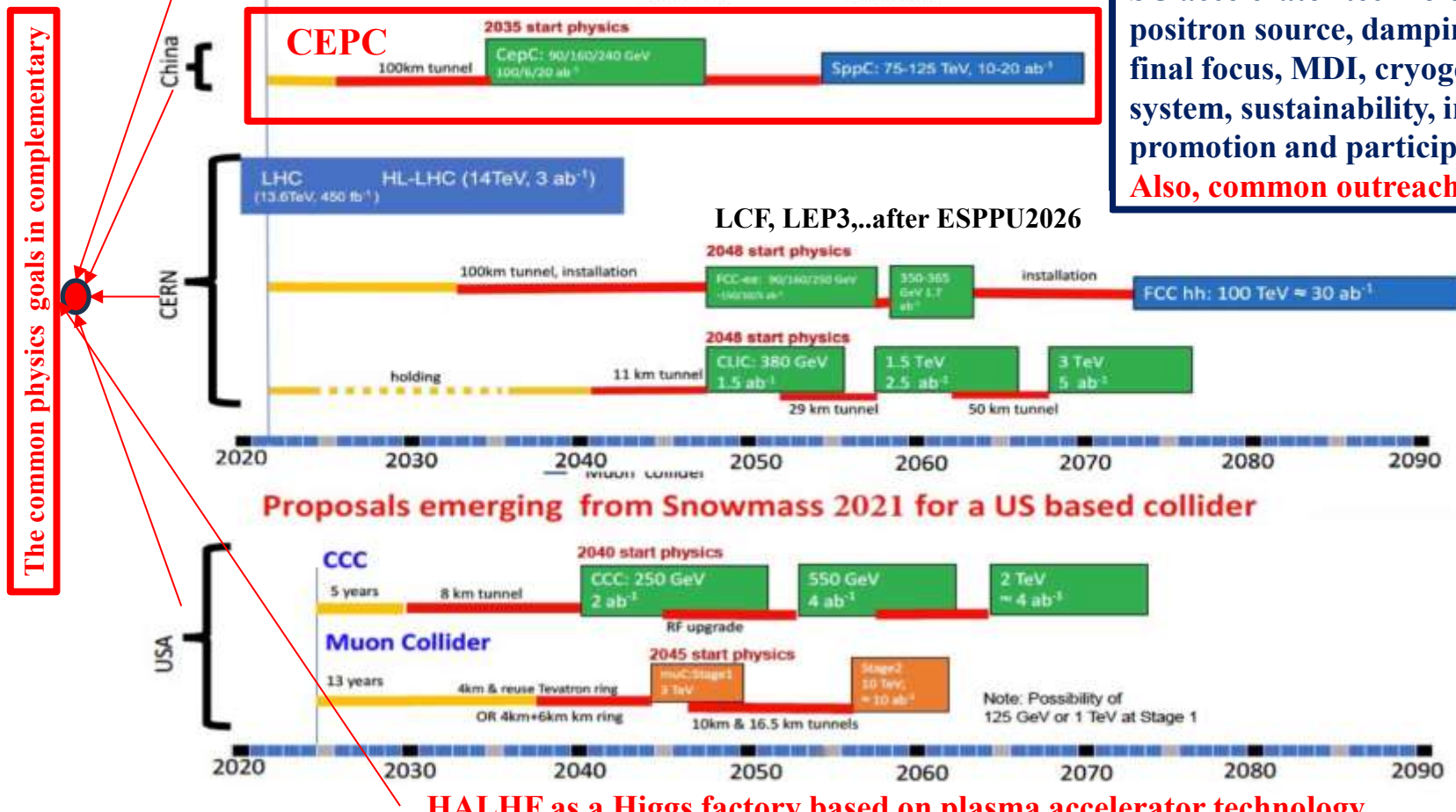
J. Gao

IHEP

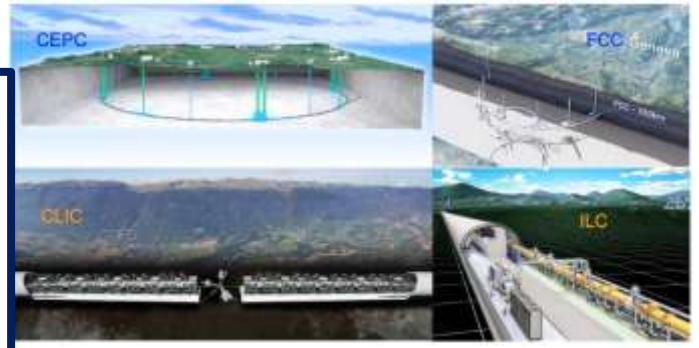
On behalf of CEPC-SppC Accelerator team

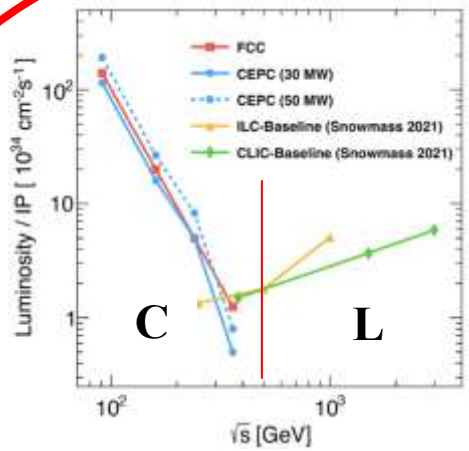
CEPC Day, Dec. 18, 2025, IHEP

Worldwide High Energy Physics Frontier Goals Timelines and Common Efforts



Future large colliders have the common physics, accelerator and detector technologies:
SC accelerator technologies, positron source, damping ring, final focus, MDI, cryogenic system, sustainability, industrial promotion and participation.
Also, common outreach activities





The complementarity between circular and linear Higgs factories

HALHF as a Higgs factory based on plasma accelerator technology

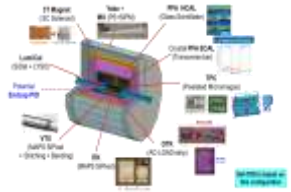
G. Arduini，et al, Future Colliders Comparative Evaluation - Working Group Report, ESPPU26, 2025,
https://indico.cern.ch/event/1439855/contributions/6542430/attachments/3076609/5444588/Future_Colliders_Comparative_Evaluation_WG_report.pdf

CEPC Milestones and Timeline

Year 2012 2013 2015 2017 2018 2023 2025 2030 ~2030's construction

CEPC kickoff meeting in Sept. 2013

CEPC detector reference design released in Oct. 2025



Proposal (2030) for CEPC entering 16th five-year-plan

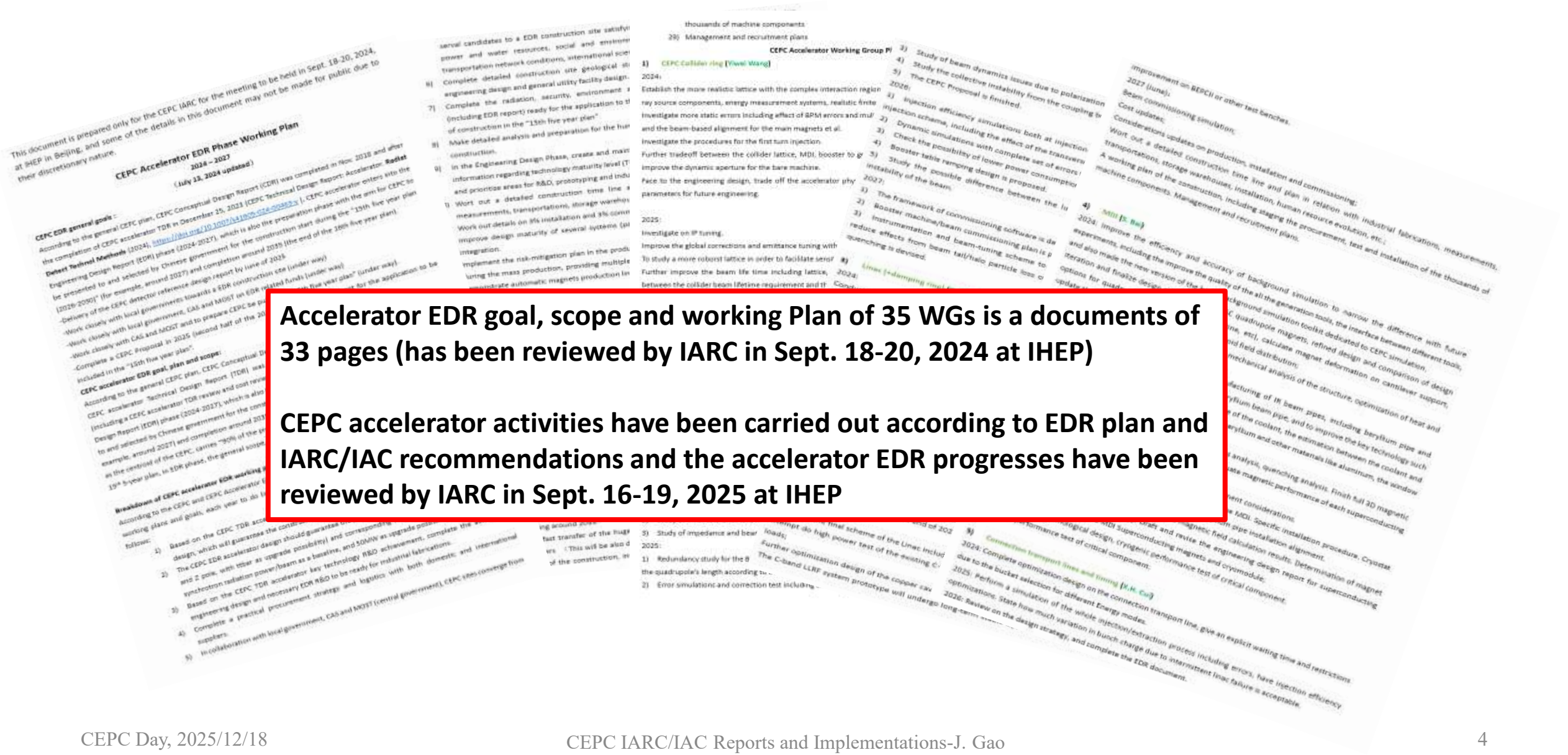
38B RMB
Total construction

CEPC EDR site study and civil engineering design

2012.9 CEPC proposed
2013.9
2015.3 Pre-CDR
2017.4 Progress report
2018.11 CDR
2023.12 TDR
2024 ~ 2027 EDR
~2030's construction

J. Gao, "The CEPC Project Status", Nov. 2025, arXiv:2505.04663, https://doi.org/10.48550/arXiv.2505.04663

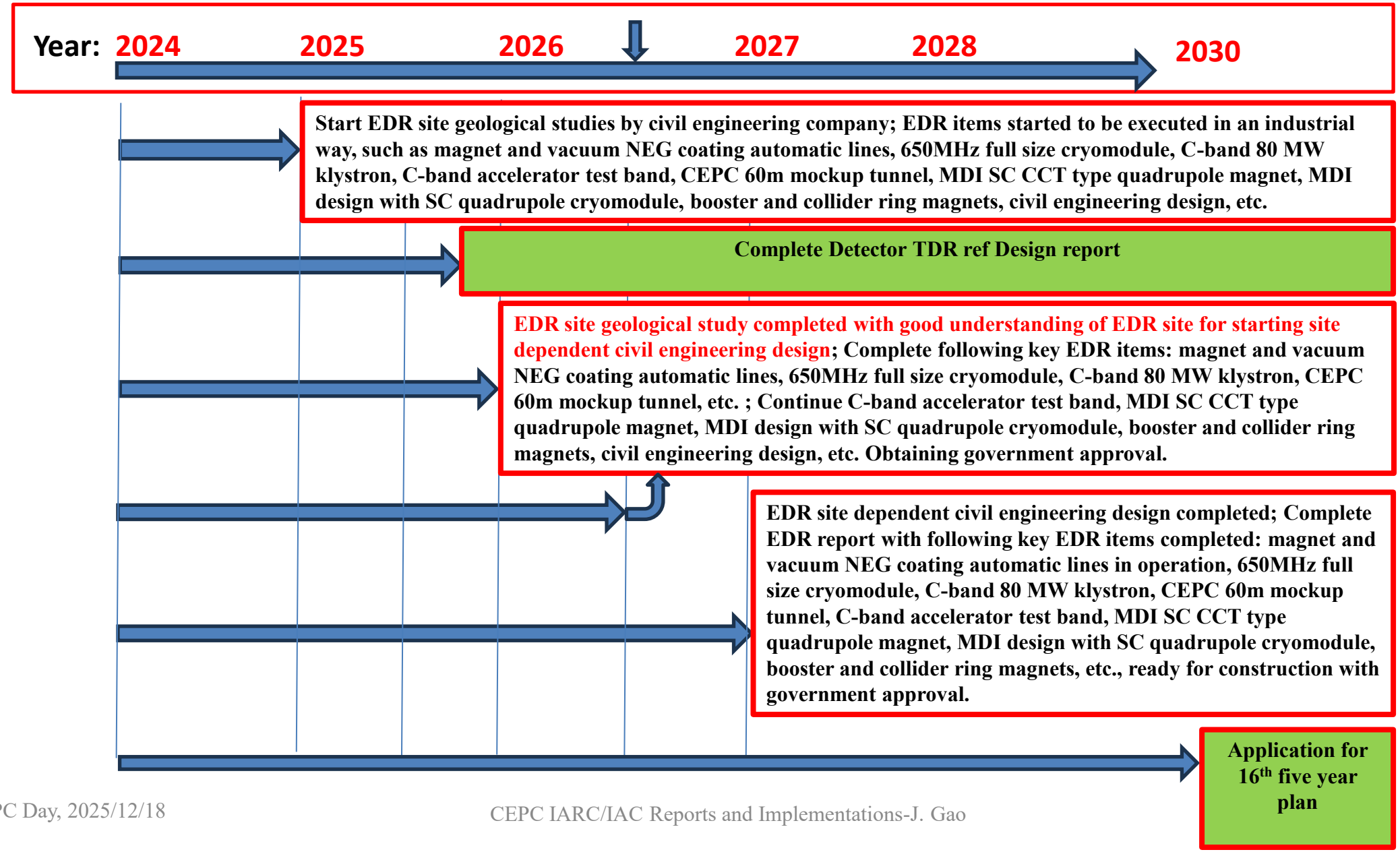
CEPC EDR Goal, Scope, Plan and Progresses



Accelerator EDR goal, scope and working Plan of 35 WGs is a documents of 33 pages (has been reviewed by IARC in Sept. 18-20, 2024 at IHEP)

CEPC accelerator activities have been carried out according to EDR plan and IARC/IAC recommendations and the accelerator EDR progresses have been reviewed by IARC in Sept. 16-19, 2025 at IHEP

CEPC EDR Milestones



CEPC IARC EDR Review Report (2025)

Second CEPC IARC EDR Review Report

CEPC IARC EDR Review Committee

19 September 2025

The CEPC Study Group, hosted by the Institute of High Energy Physics (IHEP), has been working on the design and development of a forefront e^+e^- collider as a Higgs factory that can extend to energies corresponding to the production of Z, WW and top-quark pairs, with the upgrade potential to a ~100 TeV pp collider. The CEPC represents a grand plan proposed, studied, and to be constructed by Chinese scientists in close collaboration with international partners. The CEPC Accelerator Technical Design Report was released in December 2023, which documents the design, the outcomes of the R&D of key technologies, the technical systems, and the cost estimate of the CEPC e^+e^- collider. Going beyond the accelerator TDR and preparing the CEPC for the construction that may begin in 2027-8, the CEPC Study Group has started the Engineering Design Study for which the outcome will be documented in a formal report (EDR). The CEPC Study Group plans to submit a proposal to the Chinese government requesting the inclusion of the CEPC in the 15th Five Year Plan. The International Accelerator Review Committee (IARC), chaired by Dr. Maria Enrica Biagini (INFN, Frascati) is asked to conduct the review on the development of the CEPC accelerator technical systems within the context of the EDR study. The Committee is specifically asked to review and comment on the following aspects:

1. Have the CEPC accelerator activities been carried out according to the EDR plan?
2. Has the CEPC accelerator team implemented or been addressing the recommendations and suggestions given by the IARC and the IAC in 2024?
3. Are the studies and replies to the concerns of the IARC's and the IAC's concerns satisfactory?
4. Is the overall EDR progress on track since the 2024 review?
5. Are there weak points in the CEPC accelerator EDR program? If so how can they be remedied?
6. Any other issues you notice or any improvements you may suggest.

It is requested that a Committee report responding to these charges be forwarded to the CEPC Steering Committee Chair, Professor Yifang Wang by October 20, 2025.

The preliminary answers to the IARC recommendations have been sent back to IARC and CEPC accelerator team will continue to work EDR and address the recommendations from IARC towards the goal for construction

1 Executive Summary

The second CEPC IARC EDR Review meeting was held in-person (with a few members joining on Zoom) at IHEP over the period of September 16-19, 2025.

The committee was invited to evaluate the advancement made since last year's review (September 2024) of the Engineering Design Study towards the construction of CEPC. A total of 26 talks were presented on the most challenging topics.

The committee wishes to congratulate the CEPC accelerator team for the excellent progress toward completion of the EDR phase.

The committee appreciated the quality of most of the presentations and was impressed by the achievements shown. The committee was pleased to see that many of the key systems, such as, for example, the high-efficiency klystron R&D, are progressing at full speed and with successful results.

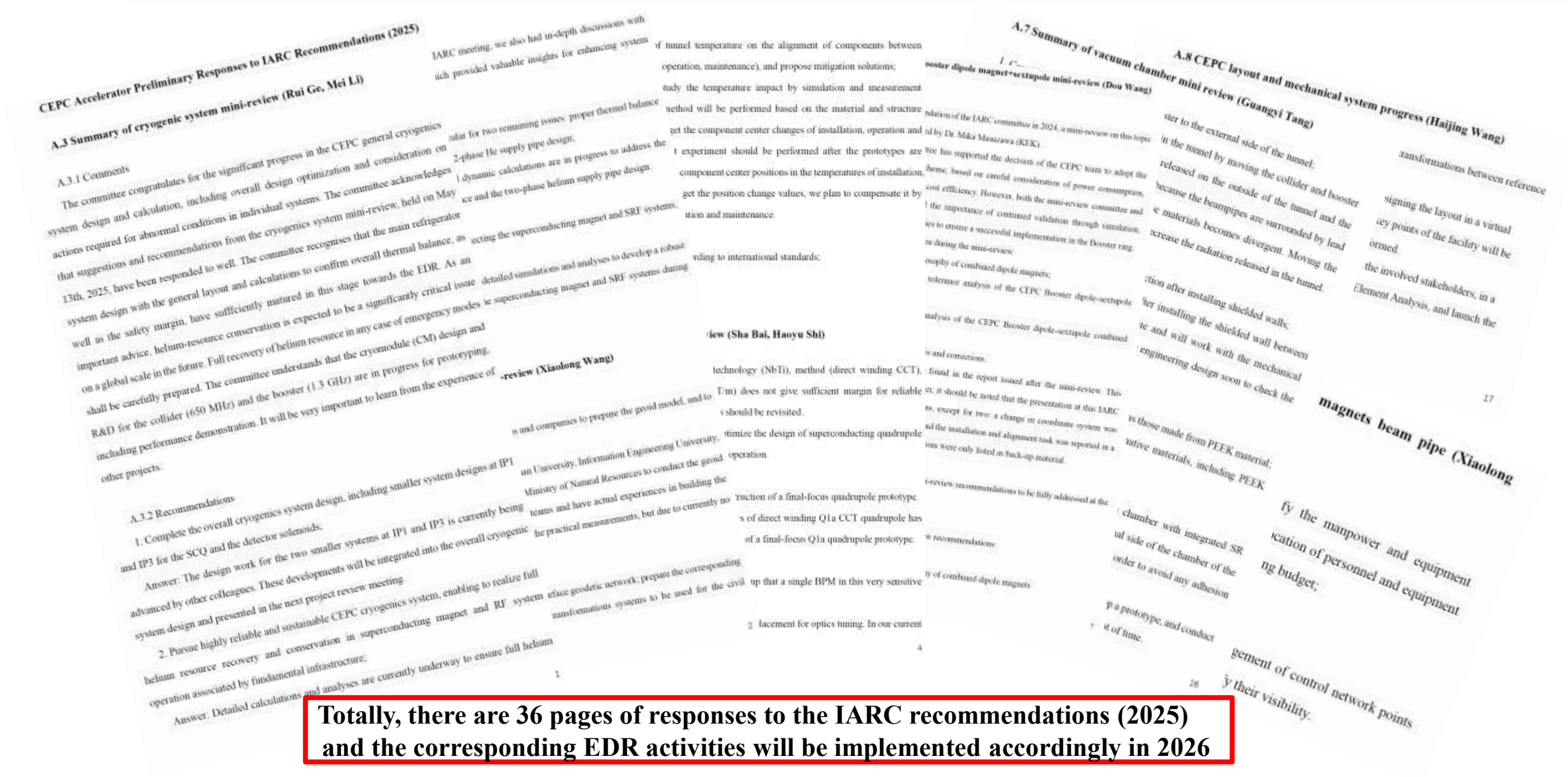
An important change since the previous meeting of the committee is the choice of the site, which represents a major milestone for the project. Many work packages can now become more concrete.

2.5 Key Recommendations

The Committee has issued comments and recommendations for the different topics and presentations, which are given in Section A. The most significant of these recommendations are shown below:

1. (**A.3.2.2**) Pursue a highly reliable and sustainable CEPC cryogenics system enabling to realize full helium resource recovery and conservation in any major failures in superconducting magnets, RF system operations associated by fundamental infrastructure;
2. (**A.4.2.2**) Define, build and measure the surface geodetic network; prepare the corresponding geodetic reference frames and the related transformation systems to be used for the civil engineering tender documents, survey layouts and CAD systems;
3. (**A.4.2.4**) Develop and qualify an automated measurement system and its specific alignment targets to fulfill the alignment requirements in the arcs;
4. (**A.5.2**) Progress and optimize the MDI region design, after deciding on the compensation scheme, and start prototyping work, especially for the final focus quadrupoles;
5. (**A.13.2.2**) For conventional facilities, analyze dynamic changes on various timescales to ensure that the necessary stability and environmental condition can be maintained during operation and periods of shutdowns and access;
6. (**A.25.2.2**) As civil engineering work now concentrates on a specific site, exploit the new opportunities to make rapid progress on the many systems that are closely connected to civil engineering and need site-specific guidelines and parameters.

CEPC IAC Report (2025)



CEPC Accelerator Preliminary Responses to IARC Recommendations (2025)

A.3 Summary of cryogenic system mini-review (Rui Ge, Mei Li)

A.3.1 Comments

The committee congratulates for the significant progress in the CEPC general cryogenics system design and calculation, including overall design optimization and consideration on actions required for abnormal conditions in individual systems. The committee acknowledges that suggestions and recommendations from the cryogenics system mini-review, held on May 13th, 2025, have been responded to well. The committee recognises that the main refrigerator system design with the general layout and calculations to confirm overall thermal balance, as well as the safety margin, have sufficiently matured in this stage towards the EDR. As an important advice, helium-resource conservation is expected to be a significantly critical issue on a global scale in the future. Full recovery of helium resource in any case of emergency modes shall be carefully prepared. The committee understands that the cryomodule (CM) design and R&D for the collider (650 MHz) and the booster (1.3 GHz) are in progress for prototyping, including performance demonstration. It will be very important to learn from the experience of other projects.

A.3.2 Recommendations

1. Complete the overall cryogenics system design, including smaller system designs at IP1 and IP3 for the SCQ and the detector solenoids.

Answer: The design work for the two smaller systems at IP1 and IP3 is currently being advanced by other colleagues. These developments will be integrated into the overall cryogenic system design and presented in the next project review meeting.

2. Pursue highly reliable and sustainable CEPC cryogenics system, enabling to realize full helium resource recovery and conservation in superconducting magnet and RF system operation associated by fundamental infrastructure;

Answer: Detailed calculations and analyses are currently underway to ensure full helium

IARC meeting, we also had in-depth discussions with ...ich provided valuable insights for enhancing system ...

...f tunnel temperature on the alignment of components between ...operation, maintenance), and propose mitigation solutions;

...tudy the temperature impact by simulation and measurement ...ethod will be performed based on the material and structure ...get the component center changes of installation, operation and ...t experiment should be performed after the prototypes are ...component center positions in the temperatures of installation, ...get the position change values, we plan to compensate it by ...tion and maintenance.

...olar for two remaining issues: proper thermal balance ...2-phase He supply pipe design; ...l dynamic calculations are in progress to address the ...ce and the two-phase helium supply pipe design.

...ecting the superconducting magnet and SRF systems, ...rding to international standards;

...-review (Xiaolong Wang)

...s and companies to prepare the geoid model, and to ...un University, Information Engineering University, Ministry of Natural Resources to conduct the geoid ...teams and have actual experiences in building the ...he practical measurements, but due to currently no ...transformations systems to be used for the civil ...

...iew (Sha Bai, Haoyu Shi)

...technology (NbTi), method (direct winding CCT), ...T/m) does not give sufficient margin for reliable ...s should be revisited.

...timize the design of superconducting quadrupole ...operation.

...truction of a final-focus quadrupole prototype. ...s of direct winding Q1a CCT quadrupole has ...of a final-focus Q1a quadrupole prototype.

...up that a single BPM in this very sensitive ...lacement for optics tuning. In our current

A.7 Summary of vacuum chamber mini review (Dou Wang)

...ooster dipole magnet+sextupole mini-review (Dou Wang)

...olution of the IARC committee in 2024, a mini-review on this topic ...d by Dr. Mika Masuzawa (KEK). ...ttee has supported the decision of the CEPC team to adopt the ...therm; based on careful consideration of power consumption, ...cost efficiency. However, both the mini-review committee and ...the importance of continued validation through simulation, ...ses to ensure a successful implementation in the Booster ring ...ss during the mini-review.

...ssibility of combined dipole magnets;

...tolerance analysis of the CEPC Booster dipole-sextupole ...

...nalysis of the CEPC Booster dipole-sextupole combined ...

...s and corrections.

...final in the report issued after the mini-review. This ...et, it should be noted that the presentation at this IARC ...ns, except for two: a change in coordinate system was ...d the installation and alignment task was reported in a ...ons were only listed as back-up material.

...-review recommendations to be fully addressed at the ...

...w recommendations:

...ty of combined dipole magnets

...p a prototype, and conduct ...t of time.

A.8 CEPC layout and mechanical system progress (Haijing Wang)

...ster to the external side of the tunnel; ...in the tunnel by moving the collider and booster ...released on the outside of the tunnel and the ...because the beampipes are surrounded by lead ...e materials becomes divergent. Moving the ...crease the radiation released in the tunnel.

...tion after installing shielded walls; ...ter installing the shielded wall between ...le and will work with the mechanical ...engineering design soon to check the ...

...ts those made from PEEK material; ...rnative materials, including PEEK

...chamber with integrated SR ...ial side of the chamber of the ...order to avoid any adhesion

...ransformations between reference ...signing the layout in a virtual ...ey points of the facility will be ...ormed. ...the involved stakeholders, in a ...Element Analysis, and launch the

...magnets beam pipe (Xiaolong ...fy the manpower and equipment ...cation of personnel and equipment ...ng budget;

...gement of control network points ...y their visibility.

Totally, there are 36 pages of responses to the IARC recommendations (2025) and the corresponding EDR activities will be implemented accordingly in 2026

CEPC IAC Report (2025)

The Eleventh Meeting of the CEPC-SppC International Advisory Committee

IAC Committee
M. E. Biagini, D. Bortoletto, A. Cohen,
M. Davier, M. Demarteau, B. Foster (Chair), J. Fuster, D. Gross,
A. Hoecker, L. Linssen, L. Maiani, M.L. Mangano, T. Nakada,
S. Stapnes, G. N. Taylor, A. Yamamoto, H.W. Zhao.

November 20-21, 2025

1 Overview

The eleventh meeting of the CEPC-SppC International Advisory Committee took place in person and via Zoom on November 20–21, 2025, where the development in the accelerator design, progress in physics and detector work, as well as the recent development on the project approval process, were presented. The appendices to this report contain the charge for the meeting (Appendix A), the members of the IAC (Appendix B), and the agenda of the meeting (Appendix C).

In light of the decision by CAS not to put CEPC forward for inclusion in the 15th five year plan, the IAC devoted most of its deliberations to the future of CEPC. It wishes to place on record its conviction that the work done so far on CEPC has been of the highest quality and that the failure to get approval in no way reflects a lack of quality of the CEPC project or the promise of the physics that it would deliver. The IAC fully supports the determination of the CEPC team and IHEP to continue the efforts towards approval, and to treat the current situation as an opportunity for reconsideration leading to further work and optimisation of the project. This is also an opportunity for the project to reconceptualize their crucial role in the global effort to develop a high-luminosity Higgs and electroweak factory to explore the physics of electroweak symmetry breaking.

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CEPC IAC Report (2025)

3 Accelerator EDR Phase

The Second CEPC IARC Engineering Design Review was held at IHEP on 16–19 September 2025 to assess progress toward the CEPC accelerator EDR and to determine readiness for a construction proposal within China's 15th Five-Year Plan anticipated. The committee reviewed 26 presentations spanning all major accelerator subsystems. Overall, the committee found substantial and broadly on-track progress, highlighted several areas needing accelerated work, and confirmed that CEPC development continues to mature toward a construction-ready design.

An important development since 2024 is the selection of the candidate site in the Henan Province, with the collider to be placed at approximately 300 m depth due to geological constraints. This represents a major milestone and enables site-specific design work across civil engineering, geodesy, power distribution, cooling and ventilation, access and installation planning, and safety systems. The deeper tunnel increases the civil-engineering cost by about 20% for these elements but allows the project to move from generic to detailed engineering.

The committee acknowledges that at the time of the current IAC meeting the CEPC accelerator team has given preliminary answers to most of the recommendations given by the IARC committee in September.

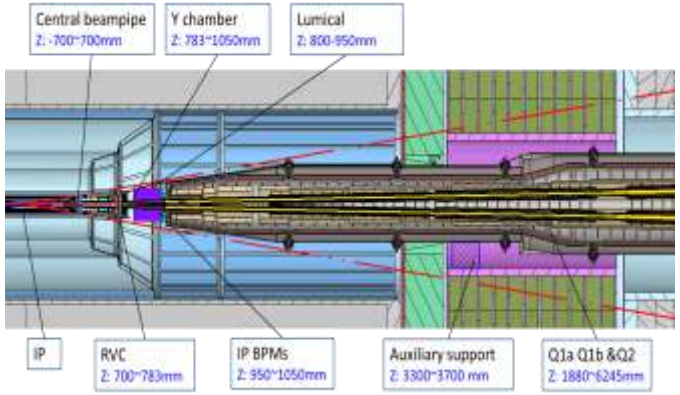
Main observations and comments:

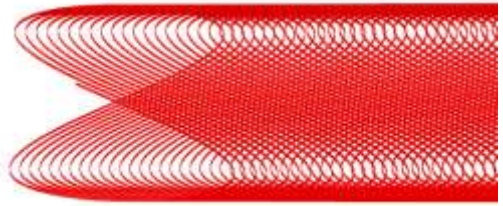
- *Technical Progress:* Five mini-workshops were organized on critical aspects of the CEPC design, as recommended at the previous IARC meeting in 2024. These have been invaluable for the committee's understanding of: Cryogenics, MDI, Vacuum, Combined-function dipoles in the booster, and Alignment. The committee commends the strong achievements across numerous work packages. Cryogenics has reached a mature design stage, with well-developed system layouts and safety concepts including full recovery of the He resource and its conservation in failure scenarios. Alignment and geodetic work has advanced significantly with defined methodologies, new geoid modelling, and automated tunnel-measurement tools; however, completion of the geodetic network and qualification of arc-alignment instrumentation remain essential. Robotic/automated production lines for the 15 000 booster combined-function magnets and the vacuum-chamber fabrication and NEG-coating system are progressing effectively, with prototyping underway. The controls group has advanced the design of the timing system, radiation-tolerant fibres, and EPICS infrastructure, but staffing remains insufficient for the required full-scale development. High-efficiency 650 MHz and C-band klystron R&D continues to deliver excellent performance, including an 80 MW C-band prototype with significant potential for reducing costs and increasing reliability. The IAC received very impressive presentations of PWFA and high-field (HF) HTS magnets R&D programs and toured the new PWFA facility. The new PWFA facility will be world-leading, in particular being the only facility that will allow investigation of positron acceleration in beam-driven plasma wakefields. The committee recognised the importance of PWFA for high-gradient acceleration toward very high-energy linac technology. Development of hybrid model dipoles with LTS (Nb_3Sn) and HTS (Re-BCO) coils has progressed and demonstrated a maximum bore field of > 14T, which is a new record with the hybrid configuration. However degradation of the coil performance after the quench was also experienced. The quench protection remains a very critical issue and the solution will have to be found for future HF HTS accelerator-magnet development.
- *Key Areas Requiring Further Work for CEPC EDR:* The Machine-Detector Interface (MDI) is identified as the least advanced subsystem. Concerns relate to the very high Q1a gradient (140 T/m), long cryostat design, material choices in high-radiation regions, unclear BPM requirements, and incomplete resolution of local versus non-local solenoid compensation, which is central for IR optimization. The IARC recommended revisiting technology choices, advancing final-focus magnet prototyping, and completing the IR optimization once the compensation scheme is selected. Vacuum-system design also requires deeper validation, especially for SR-absorber manufacturability, adequate coil shielding, cable-tray radiation levels, and access constraints. The development of a large and reliable cryogenic system, with Chinese industry, requires close attention to integrate long-term, reliable operation. In beam dynamics, the impedance model must be continuously updated with realistic hardware, and instability-mitigation tools (feedback, chromaticity) require integrated planning for Z-pole operation.
- *Civil Engineering and Site-Dependent Systems:* With the candidate site fixed, the IARC committee encouraged rapid progress on electrical networks, cooling and ventilation, survey networks, transport logistics, and safety systems. Dynamic temperature and humidity stability in the deep tunnel – critical for alignment and equipment performance – requires further modelling and specification.

The IARC concluded that the CEPC EDR work is strong, technically credible, and is progressing according to plans toward a construction-ready design. No fundamental weaknesses were identified, but several priority areas – especially MDI, alignment systems, collective-effects mitigation, and site-dependent infrastructure – must be pursued with high priority. Addressing the full set of IARC recommendations will be essential for successful completion of the EDR.

The IAC notes that recent developments imply that a revised timeline needs to be established for further accelerator development and preparations. The completion of the EDR requires substantial R&D resources, continued local support for site-specific design and industrial support. There are new concerns and uncertainty about the available resources and support for completion of the EDR. A revised accelerator project development timeline, adapted to expected resources, should be a very high priority. Such plans should provide a solid basis for project preparation and also planning of international collaborative studies during the next five years.

MDI +Optics optimization +SC quadrupole+ civil engineering of site depend system designs





CEPC IAC Report (2025)

5 Summary of Recommendations

The IAC recommends:

1. CEPC and its collaborators should continue their critical roles in the global effort to establish a high-luminosity Higgs and electroweak factory;
2. production of a new implementation plan for the CEPC project, both accelerator and detector, including milestones and deliverables, as soon as possible and report at the CEPC Workshop in Lisbon;
3. CEPC and IHEP should continue R&D into areas such as plasma wakefield acceleration and HTS magnet development;
4. ensuring that news that CEPC continues with a revised project plan is widely disseminated including to bodies such as ICFA;
5. CEPC should initiate a broad programme of public engagement activities as specified in section 4.1, building on the success and excitement of e.g. JUNO;
6. CEPC should continue and build on the successful involvement with industry and technology transfer;
7. develop a competitive programme for 1-year secondment to major laboratories working on Higgs-factory development;
8. CEPC management should strive to maintain resources for the CEPC for the next phase of the project;
9. CEPC should catalyse a meeting between the incoming CERN DG and CEPC/IHEP to agree to mutually beneficial cooperation between FCC-ee and CEPC.

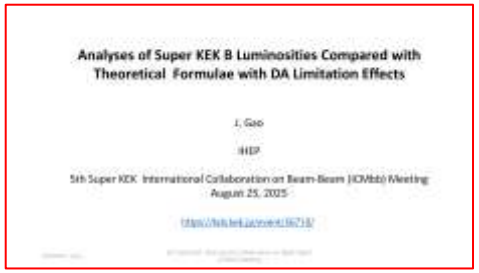
CEPC International Collaboration (Example)

Since March 4th 2025 (kick off meeting), IHEP has joined an international collaboration on beam-beam effects at SuperKEKB among CERN, IHEP, KEK and USTC. **(As recommended and encouraged by IARC and IAC)**

IHEP has participated all SuperKEKB international collaboration meetings and one Ph.D student Meng Li and one Post Doc. Chuntao Lin from IHEP have long stay at KEK on SuperKEKB injection related background and beam-beam effects joint studies.

Prof. Jie GAO from IHEP has sent presentations to the collaboration about the possible reason why SuperKEKB's design luminosity (80*10^34@βy=0.3mm) could not be achieved, and it is recommended that the next round SuperKEKB experiment go to βy=1.79mm (instead of stay at βy=1mm and smaller) possibly achieved luminosity would be around 8.7*10^34cm^-2s^-1 (about a factor of ten lower than the design goal), close to the Super KEK B post-LS1(1) luminosity target goal of 10*10^34cm^-2s^-1. If on axis injection is adopted, the luminosity could reach 14.6*10^34cm^-2s^-1 with βy=1mm.

Super KEK B is an important high luminosity e+e- collider in operation with crab waist scheme, and it is important to learn the experimental experiences for future advanced colliders such as Higgs factories of CEPC and FCC


Analyses of Super KEK B Luminosities Compared with Theoretical Formulae with DA Limitation Effects

J. Gao

IHEP

5th Super KEK International Collaboration on Beam-Beam (ICMbb) Meeting
August 25, 2025

$$L_{max}[cm^{-2}s^{-1}] = \frac{0.158\times10^{34}(1+r)}{\beta_y^*[mm]} I_b[mA]\sqrt{\frac{U_0[GeV]}{N_{IP}}}\; e^{\frac{\sqrt{\Phi p}}{3.22}}(1+0.000505*\Phi p^2) \quad \text{Eq. 1}$$

$$L_{max}[cm^{-2}s^{-1}] = \frac{0.158\times10^{34}(1+r)}{\beta_y^*[mm]} I_b[mA]\sqrt{\frac{U_0[GeV]}{N_{IP}}}\; e^{\left(\frac{\sqrt{\Phi p}}{3.22}\frac{A}{\beta_{y,(mm)}^2}\right)}(1+0.000505*\Phi p^2) \quad \text{Eq. 2}$$

for Super KEK B: A=1.6mm^2 (off axis injection)
for Super KEK B: A=0.56mm^2 (on axis injection)

The luminosities of Super KEK B without (Eq. 1) and with (Eq. 2) DA limitation effects as shown in Figure 1.

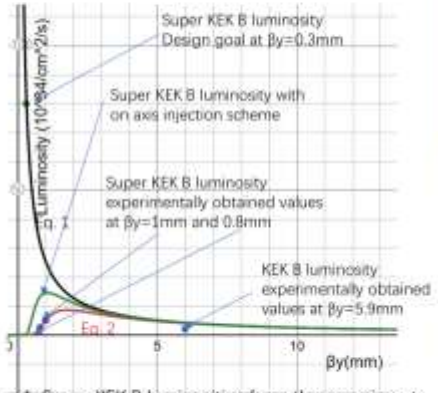


Figure 1: Super KEK B luminosities from the experiments and the analytical formulae Eq. 1 and Eq. 2

βy (mm)	Luminosity of Super KEK B (10^34/cm^2/s) (Experiments and designed)	Luminosity of Super KEK B (10^34/cm^2/s) (Jie Gao formulae, no DA effects, Eq. 1)	Luminosity of Super KEK B (10^34/cm^2/s) (Jie Gao formulae considering DA effects, Eq. 2) (Off axis injection)	Luminosity of Super KEK B (10^34/cm^2/s) (Jie Gao formulae considering DA effects, Eq. 2) (On axis injection)
0.3	80 (designed value from Table 1)	85	0	0.17
0.8	2.5 (2022abRun)	32	2.6	13.3
1	5.1 (Dec. 27, 2024)	26	5.1	14.6
1.788	To be experimented (recommended)	14.2	8.65	12
2	To be experimented	12.8	8.55	11.1
3	To be experimented	8.5	7.1	8
6	To be experimented	4.25	4.25	4.2

Table 2: Comparison of Super KEK designed and experimental luminosities with Jie Gao's luminosity analytical formulae, Eq. 1 and Eq. 2

Eq. 1 and Eq. 2 could be found in following reference:
J. Gao, "The CEPC Project Status", Nov. 2025, arXiv:2505.04663,
https://doi.org/10.48550/arXiv.2505.04663

CEPC Development Consensus

Representatives from Chinese institutes and universities unanimously agree:

- will continue to pursue CEPC in China
- will enhance cooperation with CERN on future Higgs factory

Townhall meeting of Chinese institutional representatives at CEPC-2025 workshop, Guangzhou (November 8,2025)

CEPC development consensus and decisions from IHEP director board , CEPC IB, CEPC SC, CEPC IAC and the whole CEPC Team to continue CEPC efforts and prepare to apply for 16th five-year plan in 2030

The decision has been also feedbacked to ESSP2026 on Dec. 1, 2025

中国科协发布的2025年十大科学前沿问题

On July 6, 2025, **China Association for Science and Technology (CAST)** delivered publicly the top ten frontier scientific questions, where "Higgs particle properties and the origine of masses" are among the top ten questions (the second) and CEPC is mentioned in association with replying this question

The Eleventh Meeting of the CEPC-SppC International Advisory Committee

IAC Committee
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November 20-21, 2025

1 Overview

The eleventh meeting of the CEPC-SppC International Advisory Committee took place in person and via Zoom on November 20–21, 2025, where the development in the accelerator design, progress in physics and detector work, as well as the recent development on the project approval process, were presented. The appendices to this report contain the charge for the meeting (Appendix A), the members of the IAC (Appendix B), and the agenda of the meeting (Appendix C).

In light of the decision by CAS not to put CEPC forward for inclusion in the 15th five year plan, the IAC devoted most of its deliberations to the future of CEPC. It wishes to place on record its conviction that the work done so far on CEPC has been of the highest quality and that the failure to get approval in no way reflects a lack of quality of the CEPC project or the promise of the physics that it would deliver. The IAC fully supports the determination of the CEPC team and IHEP to continue the efforts towards approval, and to treat the current situation as an opportunity for reconsideration leading to further work and optimisation of the project. This is also an opportunity for the project to reconceptualize their crucial role in the global effort to develop a high-luminosity Higgs and electroweak factory to explore the physics of electroweak symmetry breaking.

CEPC in China

1. China's economy: 9.3% of the world, 62.3% of USA, the second in the world after USA
2. China's Industry production: >1/3 (35%) of the world, the first in the world
3. China's Electricity production: 1/3 of the World, the first in the world
4. China STEM students: graduate each year >5 Million, the first in the world
5. Creative index of China: ranked 10th of the world (2025)
6. CEPC has the potential and the capability to answer the most fundamental scientific questions on our Universe (among the top ten scientific questions listed by China Association for Science and Technology in 2025, https://www.cast.org.cn/xw/BWTJ/art/2025/art_0f20c8a62cfe4584b13a53271ae73837.html)
7. China has favorable conditions to host CEPC as a Higgs factory and has big room to make significant scientific contributions to the world and peaceful collaborations with the world through CEPC development
8. CEPC is a scientific Olympic Games, which will have a long-lasting impacts on China's scientific and general developments, and worldwide development also

Global Innovation Index 2025 rankings

GII rank ↓	Economy	Score	Income group rank	Region rank
1	Switzerland	66.0	1	1
2	Sweden	62.6	2	2
3	United States	61.7	3	1
4	Republic of Korea	60.0	4	1
5	Singapore	59.9	5	2
6	United Kingdom	59.1	6	3
7	Finland	57.7	7	4
8	Netherlands (Kingdom of the)	57.0	8	5
9	Denmark	56.9	9	6
10	China	56.6	1	3
11	Germany	55.5	10	7
12	Japan	53.6	11	4
13	France	53.4	12	8
14	Israel	52.3	13	1
15	Hong Kong, China	51.5	14	5
16	Estonia	51.1	15	9
17	Canada	51.1	16	2
18	Ireland	50.4	17	10
19	Austria	50.1	18	11
20	Norway	49.2	19	12
21	Belgium	48.5	20	13
22	Australia	48.0	21	6
23	Luxembourg	47.3	22	14
24	Iceland	47.0	23	15
25	Cyprus	45.5	24	2

Summary

- International efforts towards Higgs factories are common endeavors of human beings, and the final goals should be and could be reached with persistence and endurance.

IHEP will always be one of the climbing teams towards energy frontiers and among the teams to reach the goal

The near-term goal: complete EDR (2024-2027)
The longer-term goal: CEPC apply 16th five-year plan (2030)