

Charge to the CEPC International Advisory Committee

October, 2023

The Circular Electron Positron Collider (CEPC+SppC) Study Group, consisting of scientists, engineers and students from China and abroad and hosted by the Institute of High Energy Physics of the Chinese Academy of Science, has been developing and refining the design of the CEPC accelerator and the detector system, is carrying out the R&D program, the development of the software, and the site preparation.

The present goal of the CEPC Study Group remains to be ready for the scenario in which the CEPC will begin construction in 2027-8 during China's 15th 5-year plan (2026-2031). The CEPC Study Group has completed the work for the e^+e^- accelerator Technical Design Report (TDR) and will publish the TDR soon. In the meantime, the overall CEPC proposal has received highest ranking in the evaluation by the Chinese Academy of Sciences' Strategy Development Group on Future Particle Physics and Nuclear Physics Facilities, as part of the nation's planning for the 15th 5-year period. The group will embark on the Engineering Design Report (EDR) study, and will continue to improve the design and the critical technical systems, and will enhance the organization and the global collaboration.

The CEPC International Advisory Committee shall advise on all related matters for the CEPC project, in particular on the following aspects:

1. Examination of the TDR draft and the results of the Phase-I (technical systems) and Phase-II (costing of the CEPC accelerator) review committees, and providing the IAC's professional opinion. For the IAC committee's reference, a recent draft of the CEPC accelerator TDR, including the revisions required by and subsequently approved by the review committees, has been supplied to the IAC. The chairs of the review committees will also brief the IAC on their work.
2. The CEPC Study Group has begun planning for the EDR study and will present an initial roadmap. Advice on the EDR plan will be critical and highly important.
3. The CEPC Study Group will also need to ensure the readiness of the detectors for the eventual commissioning of the experiments in a timely manner that is compatible with the construction plan of the accelerator. The CEPC team has been developing a new CEPC detector system concept, beyond those outlined in the CEPC CDR, by utilizing advanced and emerging state-of-art technologies under R&D, to maximize future physics output at CEPC. Guidance on the development of the detector systems and relevant international collaboration will be appreciated.

The committee is invited to give suggestions on any aspect of CEPC beyond the above items.

It is requested that a committee report responding to this charge be delivered to IHEP director Yifang Wang by November 30, 2023.

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