



Research Team on Major Upgrade Project of the Beijing Electron-Positron Collider

The research team of the CAS Institute of High Energy Physics has successfully upgraded the Beijing Electron-positron Collider (BEPC) to BEPC II, a two-ring collider with a design luminosity of $0.3\text{--}1 \times 10^{33} \text{ cm}^{-2}\text{s}^{-1}$ which is 30 to 100 times higher than that of the one before the upgrade. During its construction lasting from 2004 to 2009, a series of innovative technological breakthroughs have been achieved.

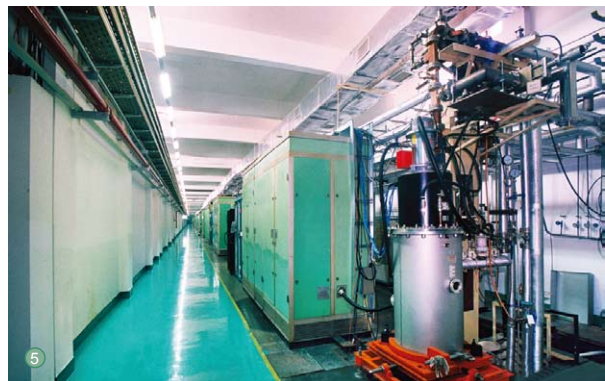
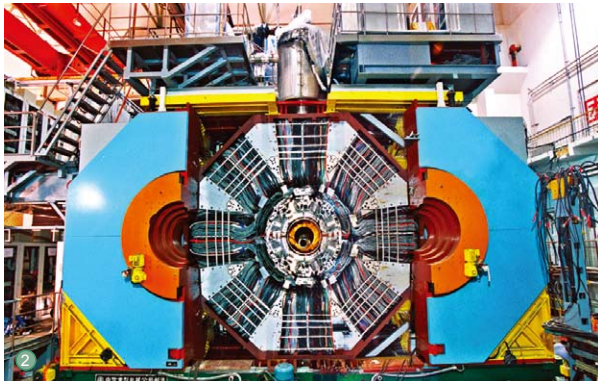
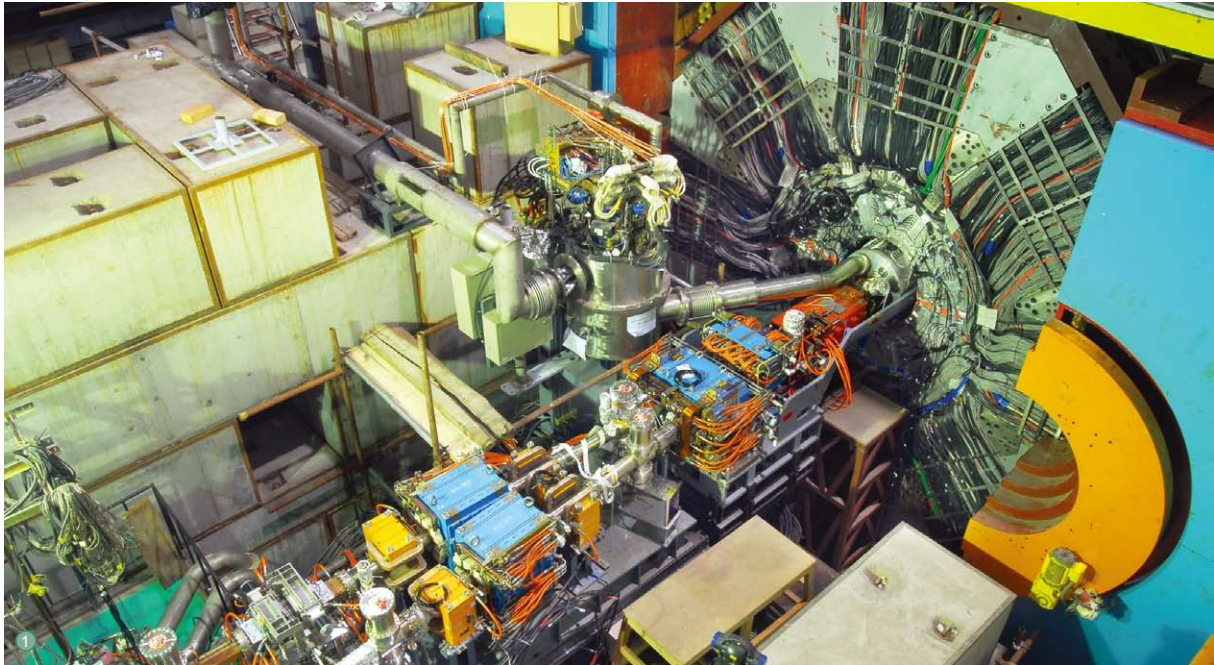
As a “dual-purpose” collider, BEPC II can be used for both high energy physics and synchrotron radiation research. The performances of its accelerator and detector are the best in the energy region in the world. As soon as the upgrade was accomplished, it immediately started operating and producing data with high efficiency. The highest colliding luminosity has hit $6.49 \times 10^{32} \text{ cm}^{-2}\text{s}^{-1}$, 65 times higher than the collider before the upgrade and

eight times higher than the international record at that time. Moreover, its daily integrated luminosity was a factor of 87 times higher compared with the BEPC. This upgraded collider has also secured the world's largest data samples of J/ψ , ψ' and ψ'' . Especially, the team has made a number of notable results in the Charm physics and the light hadron spectroscopy.

As the general manager of the project, CAS Member CHEN Hesheng is responsible for making BEPC II one of the world's best. It's him who firstly proposed the blueprint of the BEPC II, promoted its design and pre-research, laid out the two-ring scheme, and managed its construction and commissioning. IHEP Research Fellows ZHANG Chuang and LI Weiguo also made indispensable contributions to the project as vice managers. The three and other 17 members of the team were honored with this award.

The double ring at the BEPC II. The collider consists of two 237.5m-long storage rings, one for electrons and the other for positrons, each of which holds 93 bunches with a beam current of 910mA.





- ① The interaction point of the BEPC II.
- ② Beijing Spectrometer III (BES III), the detector of the BEPC II.
- ③ The experimental hall of the Beijing synchrotron radiation facility (BSRF).
- ④ The Linac injector.
- ⑤ The Modulators of the Linac.