Non-academic

Status of CEPC-SppC

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Current Status

- **Conceptual design & preliminary cost estimate completed**
- **Pre-CDR ready for international review**
  - **Please sign the pre-CDR at http://cepcdoc.ihep.ac.cn:7080/cepc/precdr/reg.htm**
- **R&D issues identified and funding request soon**
  - **Important for technological development anyway**
  - **No show-stoppers**
  - **Main issue: optimization, cost reduction & reliability**
  - **Seed money for R&D from IHEP: 12 M RMB/3 years**
    - **SRF cavities, cryo. System, instrumentation, …**
- **Seek government support**
  - **Many local governments invited us**
  - **No official opinions from central gov.**
    - **Personal opinions: +/-**
  - **R&D funding request this year**

CEPC ? ILC ? SPPC ? FCC ?

- **CEPC is our main goal now. SPPC is very attractive but at the distant future.**
- **CEPC design has to maintain the possibility for SPPC, but there is no need now to firmly prove the feasibility of SPPC, scientifically or technologically.**
- **We should try our best to work together for the future pp machine, SPPC or FCC**
- **CEPC & ILC are complementary, and can happen at the same time**
  - **As a fraction of GDP, we are not asking more than what we obtained in 50-90's.**
  - **HEP after the cold war: need new argument. WWW ?**
  - **CEPC+ILC: Two machines & two detectors, no push-pull option for ILC**
- **Some level of competition can only help our case**
  - **Each continent has a major project**
  - **ILC approach ?**

(CEPC) Realistic ?

- Politically & financially: possible
- Technically: cutting edge but surely can be done
- Man power & technology know-how:
  - Internationally: yes, even CEPC+ILC(2 machines+2 detectors)
  - In China ? hard but we need them anyway

International collaboration:

Of course needed

Not only because we need technical help

But also for financial & political support in China

a way to integrate China better to the international community

a way to modernize China's research system("open door" policy)

A machine for the community

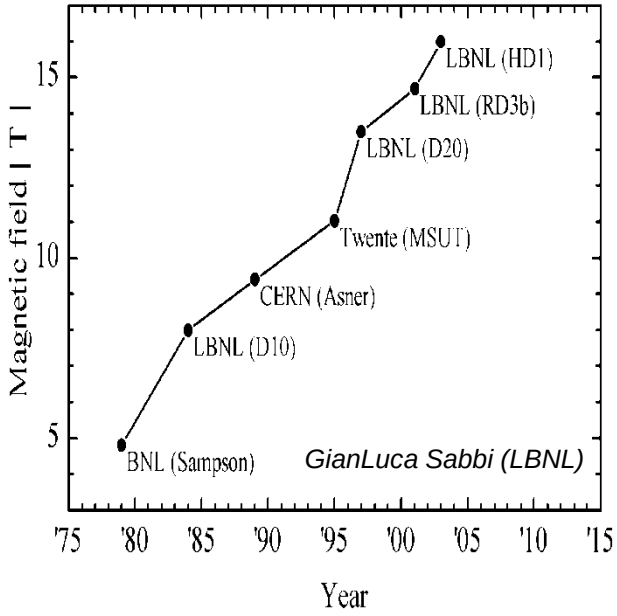
one of the machine in each continent

International Collaboration

- **Right now the pre-CDR is mainly Chinese efforts with international help**
  - **An excise for us**
  - **Build confidence for the Chinese HEP community**
- **A new scheme of international collaboration to be explored:**
  - **Not the same as ITER, ILC, CERN, …**
  - **A new institution, a consortium, or just a new project ?**
- **An international advisory board will be formed to discuss this issue**
- **Welcome suggestions**

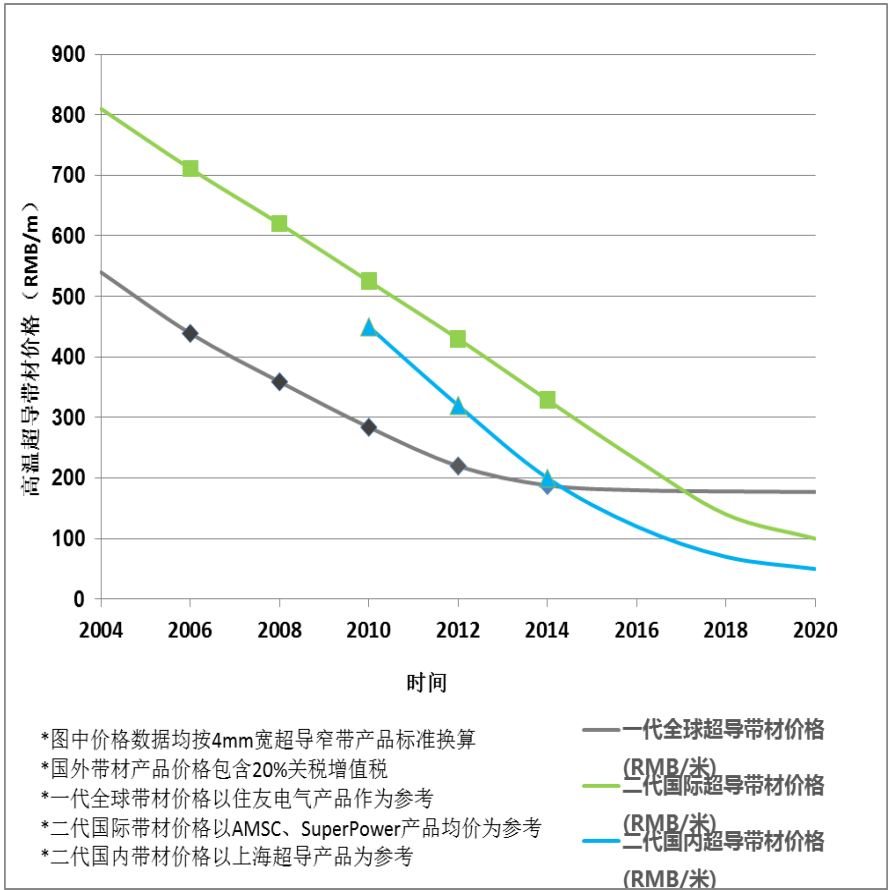
SPPC/FCC magnet ? Personal View

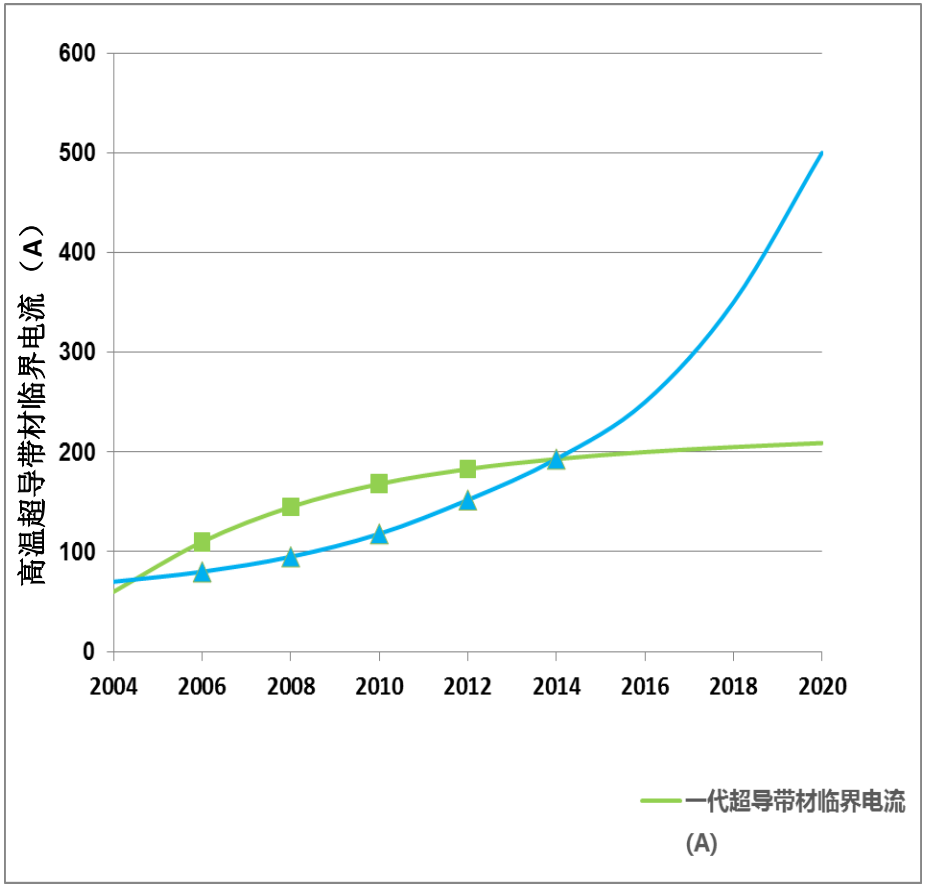
- (Dis)qualification: I know a little of SC magnet
  - I spent about ~30 min per day for two years during the construction of the BESIII SC solenoid magnet
  - I witnessed how to ramp up from scratch, and participated major decision processes
- One way or another, there will be magnet for SPPC/FCC
  - I know where we are now, where we would like to go in the future
  - I know the Chinese team/industry
  - We need it for ~ 2035, and we need 20 years to develop the technology. A perfect match !



Future of Superconducting Cables: Optimistic ?

- Cost per meter is decreasing by ~ 3 times in last 10 yrs
- Current limit per unit area is increasing by ~3 times in last 10 yrs
- Unit price (/m/A) can improve by ~100 times over 20 years, IF…
- Industrial people promised at least a factor of 10 !



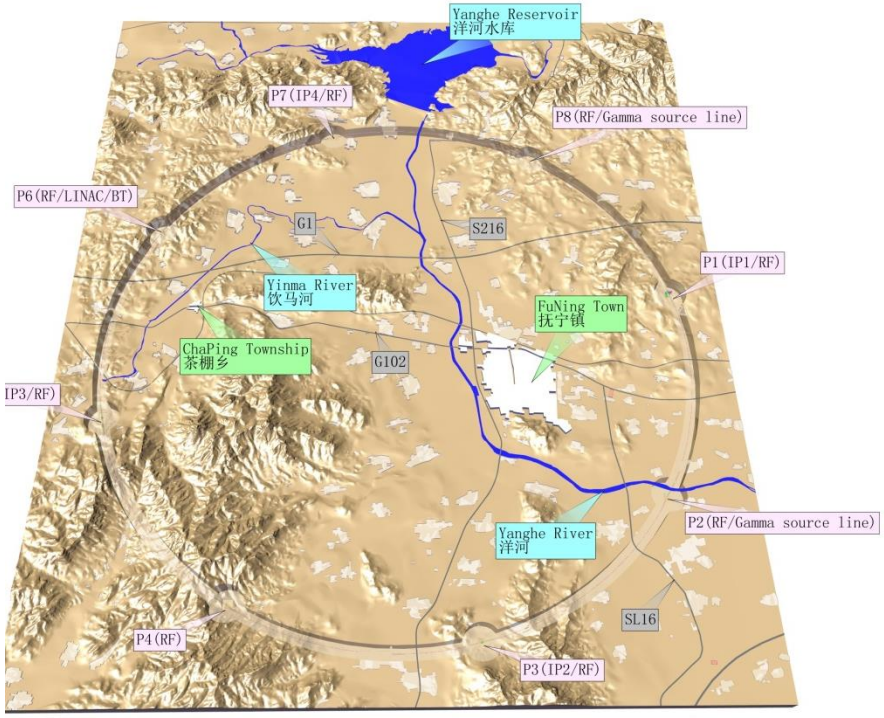


China Can Play a Role

- Most of the rare earth materials are from China
- China provided more than half of the superconducting cable to ITER
- Easy to get government support
- Past experience:
  - Superconducting solenoid magnets at IHEP
  - 11T Nb_3Sn magnet under development
  - Several companies with capabilities to manufacture Nb_3Sn, YBCO, Bi-2212 and Bi-2223 cables

Civil Construction

- The key to keep the cost low
  - Find a site geologically the best (granite !)
  - Optimization of the design
  - Choose the right designer & construction contractor
  - Management
- Daya Bay(3.1 km) & JUNO(D=50m，H=70m cavern) gave us a lot of experience



Summary

- Tremendous efforts up to now
- Real progress in all fronts
- A promising future: please be optimistic !
- Let work together to make it happen