

Welcome to KEK

KEKB Review Com
040216
Y.Totsuka

153ha

KEKB collider

BELLE experiment

2.5GeV PF

6.5GeV PF-AR

K2K beamline

neutron, muon facilities

Proton Synchrotron

e LINAC

Computer center

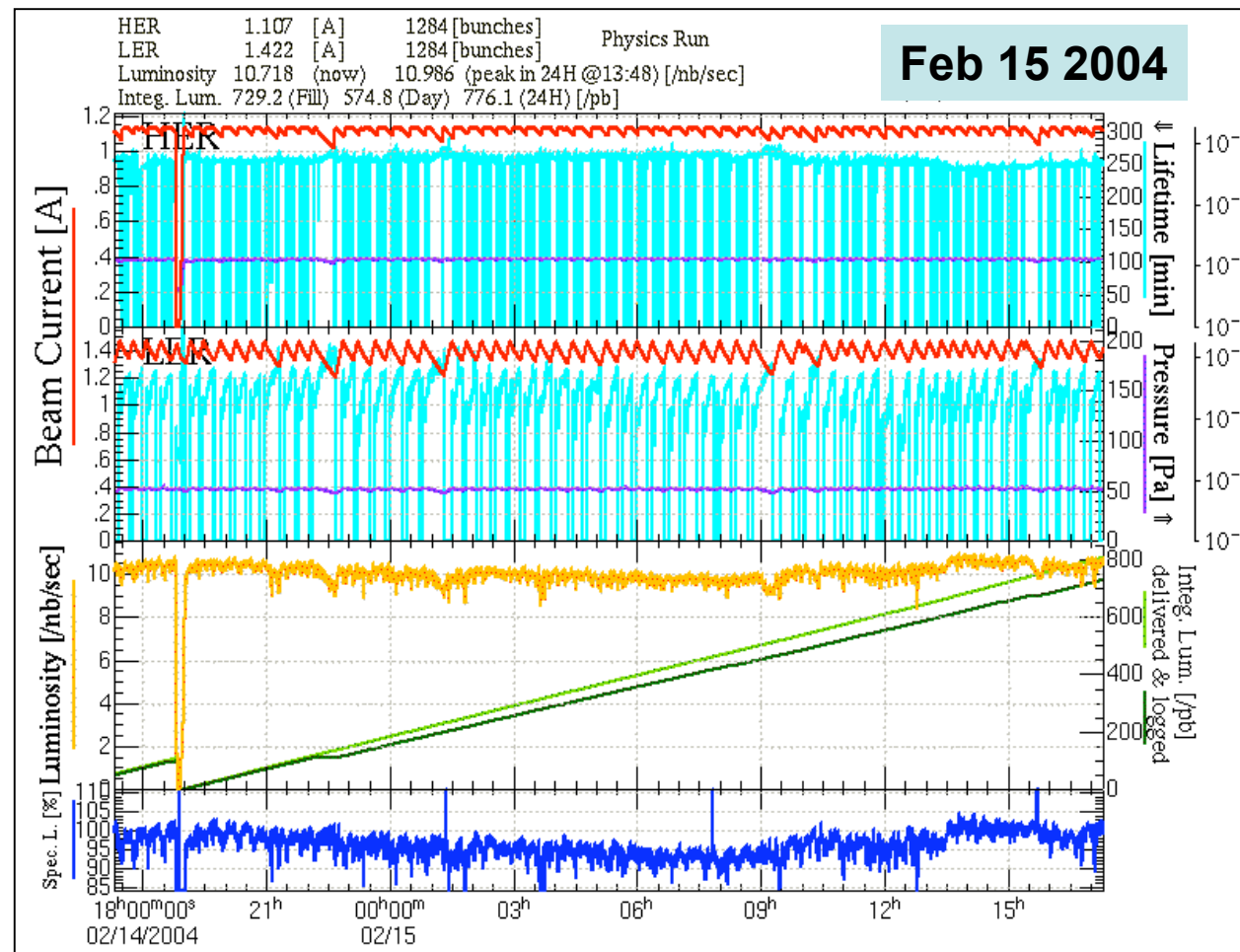


J-PARC (Joint project with JAERI)



As of Dec 2003

- The record peak luminosity of 10^{34} /cm²/s was cited by many newspapers.
- Now an equally important step, the continuous injection has started for normal runs. This will significantly increase the integrated luminosity.



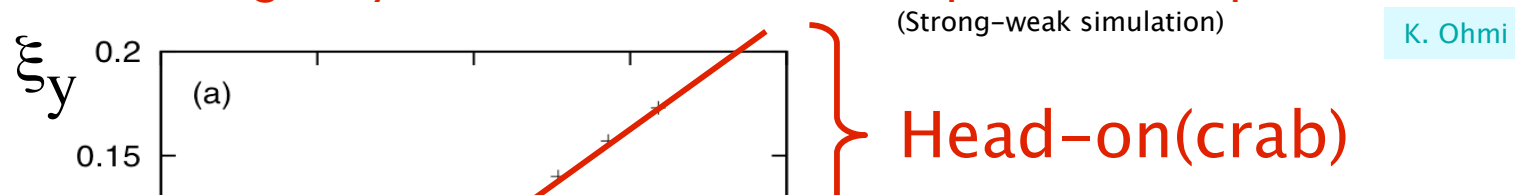
- **There are two frontiers that we confront for the future development of accelerators:**
- **Energy frontier**
 - **Proton-proton collider, LHC with the CMS energy of 14 TeV**
 - **Linear collider with the phase-1 CMS energy 500 GeV upgraded to >1 TeV in the phase 2.**
 - **A problem is that there is not, as long as I know, a clear image of what kind of accelerators are needed and should be built beyond LHC and LC.**
 - **Another problem is that there are few immediate applications of energy-frontier accelerators to industry and society. It would be easier, if you find some applications, to convince tax payers about the importance of energy-frontier accelerators.**

■ Intensity frontier

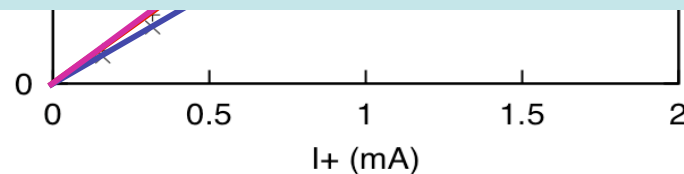
- **Electron-positron colliders, KEKB and PEP II with luminosity of about 10^{34} /cm²/s**
- **Proton accelerators, J-PARC and SNS with beam power of about 1 MW**
- **Clear plans in immediate future:**
 - **A Super B-factory with luminosity of about 10^{36} /cm²/s aiming at studies of new physics buried in higher order phenomena**
 - **Internationalize the effort like the LC project: a close collaboration between KEKB and PEP II and others**

Activities towards luminosity upgrade

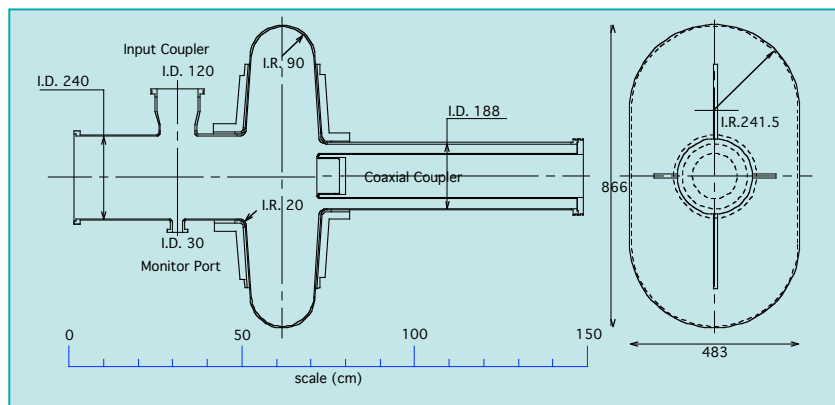
- Crab crossing may boost the beam-beam parameter up to 0.2!



Allocated about 5 M\$ for the crab cavity R&D and construction in FY2004

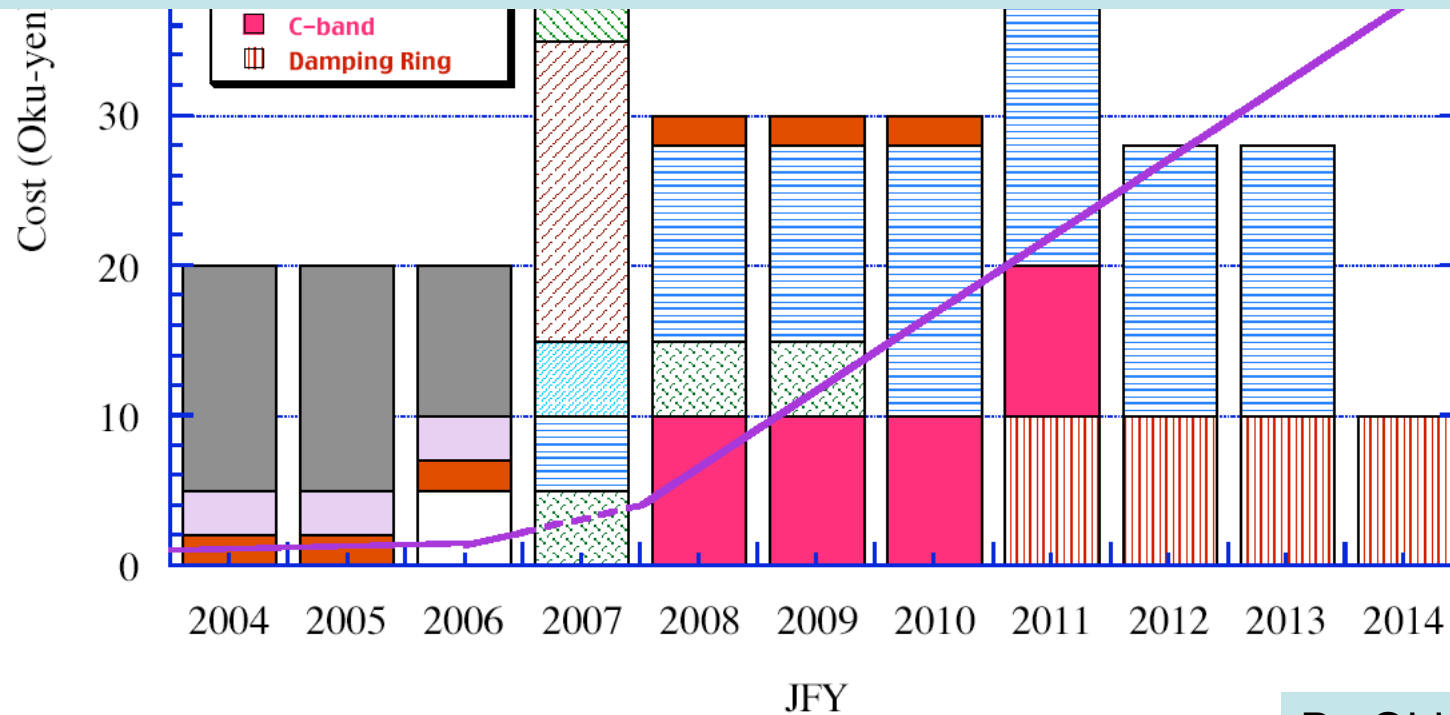


- Superconducting crab cavities are under development, will be installed in KEKB in 2005.



Adiabatic Construction

This year Oide sent us a **450 M\$** budget proposal for Super-KEKB which is not compatible with this figure!!



By Oide, July 2003

- **Proton drivers of several MW for a neutrino factory and eventually for a muon storage ring**
- **Applications are possible:**
 - **Light sources for material and life sciences**
 - **Spallation neutrons and pulsed muons for material and life sciences**
 - **Transmutation of radioactive nuclear wastes, ADS**

- **To which direction a lab must go, energy frontier or intensity frontier or both, is a difficult question.**
- **We support the luminosity upgrade of the KEKB machine within the available resources.**
- **The realization of a LC is being pursued world-wide very actively and very rapidly especially this year.**
- **KEK is one of the proponents of the LC.**
- **Considering KEK's current budget scale, it is not possible for KEK to host both LC and Super-B.**

- **For the time being it is one of our highest priorities to increase the luminosity delivered by KEKB to the limit, within the available resources.**
- **Your comments and suggestions are greatly appreciated.**