

Luminosity Upgrade Path

2/24/2001 K. Oide @ MAC2001

0. Further optimization of machine parameters:

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Increase emittance Increase bunch charge	Higher luminosity up to $\xi_y = 0.03$.	Machine time for setup and tuning Replacement of HER masks is required.
Reduce β_x^*	Increase ξ_y	higher background at injection; less dynamic aperture
Reduce bunch length	Higher luminosity	Shorten LER lifetime Increase HOM loss at HER masks
2-bunch injection of positrons	Double the inj. rate.	Fill pattern is restricted in some special way.

1. Antechamber

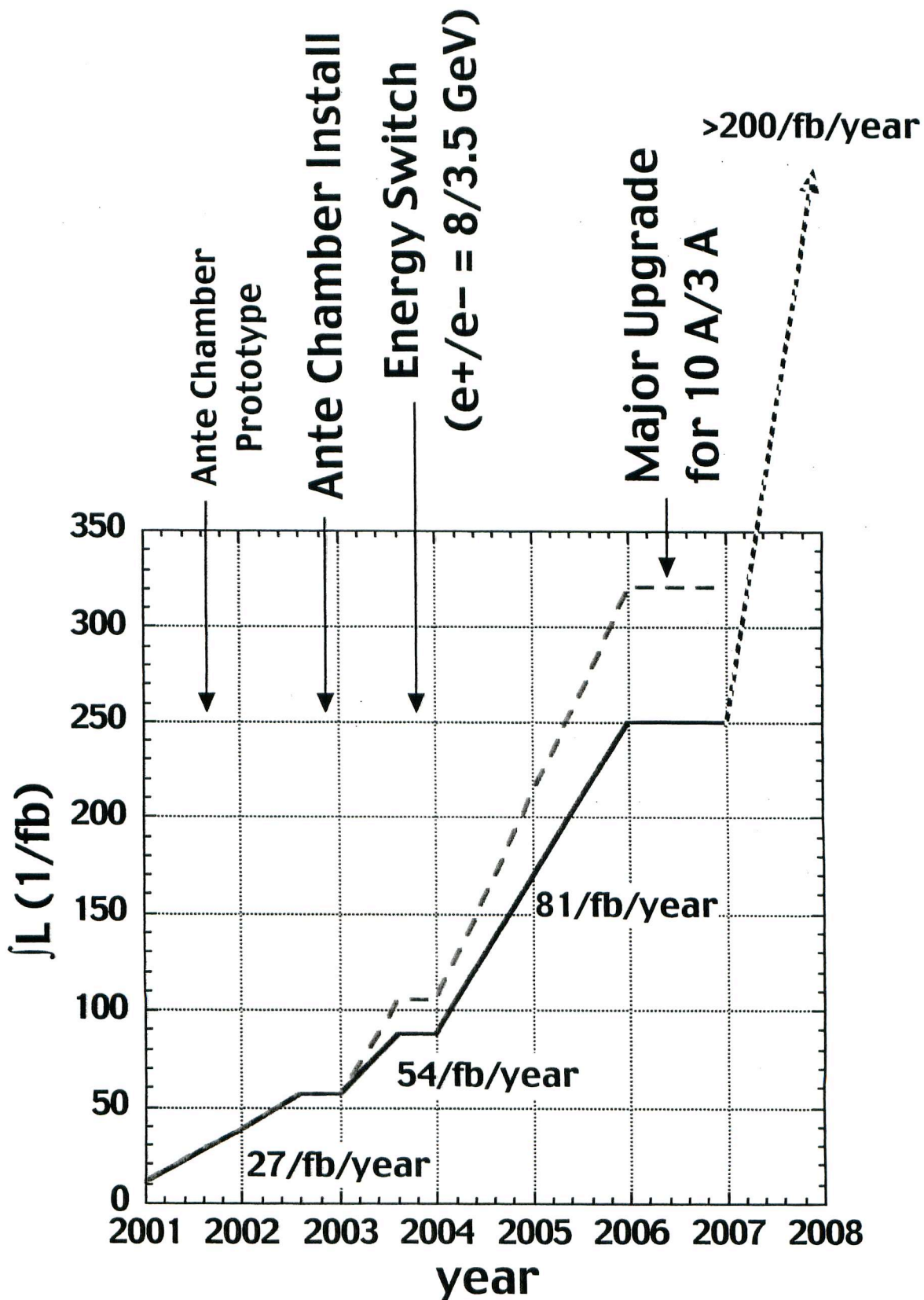
- Let more than 90% photons escape.
- Basic design was done by K. Kanazawa.
- A prototype will be installed in LER in October 2001.
- Compatibility with future upgrade and charge switch should be discussed.

2. Charge switch (8 GeV positron)

- Require less positrons required, produce more.
- May reduce the electron-cloud effect.
- Damping ring at Linac will be necessary.
- Testing electron in LER is necessary to confirm the ion is not critical.
- A long shutdown of Linac affects photon factories.

3. Crab cavity

- 20% increase of luminosity is expected by simulation.



8-GeV Positron Injector

Dec 2000, by A. Enomoto

