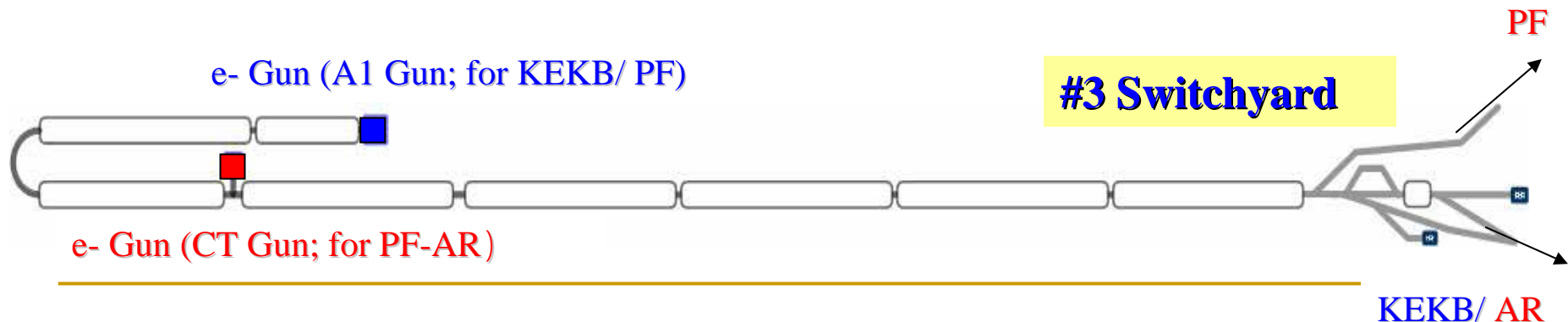

**PRESENT STATUS OF THE KEK
INJECTOR UPGRADE
FOR THE FAST BEAM-MODE SWITCH**

**M. Satoh, KEK
for the Injector Upgrade (IUC) WG members**

KEK Injector Linac:

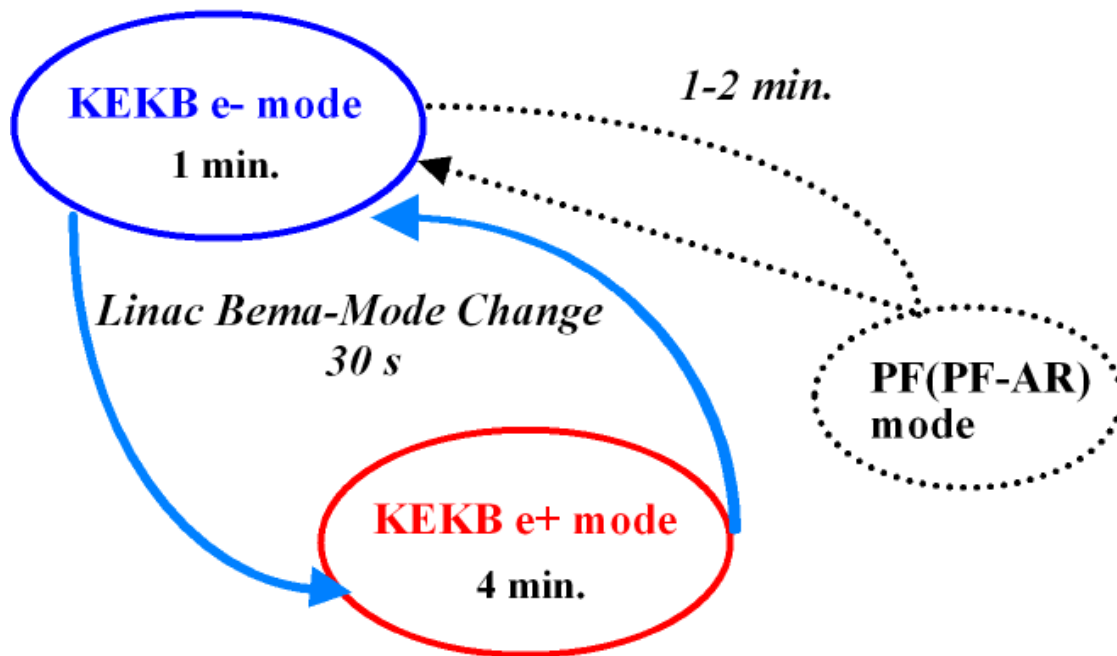
- J-like shaped Linac (600-m-long)
- Injector for the four independent rings:
 - PF (2.5-GeV e-/ 0.1-nC) Twice/ day
 - PF-AR (3-GeV e-/ 0.2-nC) Twice/ day
 - **KEKB HER (8-GeV e-/ 1-nC) Continuous Injection Mode (CIM)**
 - **KEKB LER (3.5-GeV e+/ 1-nC) CIM**



KEKB Injection (CIM)

- Frequent Switch of Linac Beam-Mode (parameters):

KEKB CIM Mode



- Many parameters should be changed.
- Timing
- LLRF Phase
- Magnet parameter
- etc.

• Beam-mode switch time should be drastically reduced for the KEKB CIM and PF Top-up.

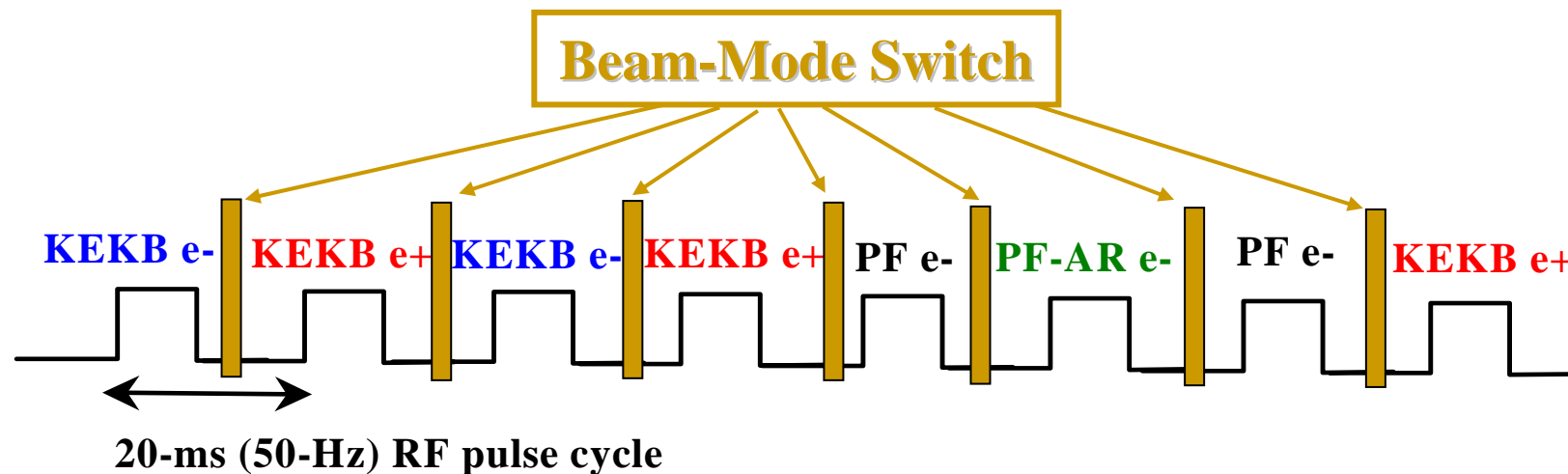
Fast Beam-Mode Switch using = Multi-Energy Linac Scheme =

- *Magnetic Field :*

- Common Parameter (Q and Steering magnets)

- *Fast Energy Adjustment :*

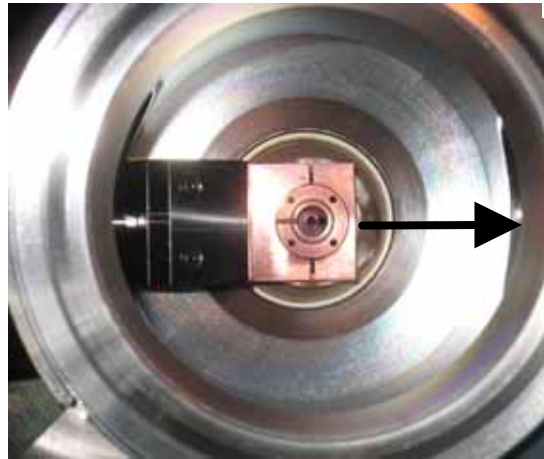
- Fast Control of Low-Level RF phase



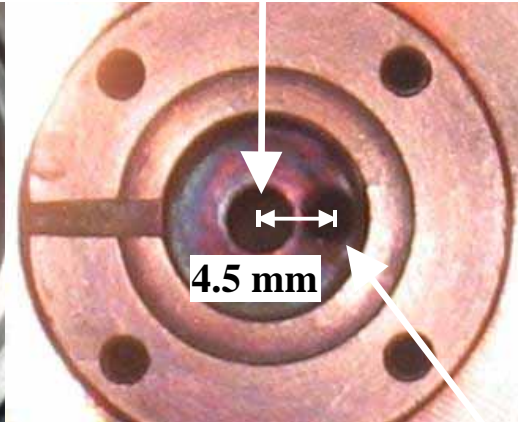
Subsystems R&D

e+ target with a hole for a fast switch between e- and e+

TUP012



W crystalline target ($\Phi 4.5$ mm)



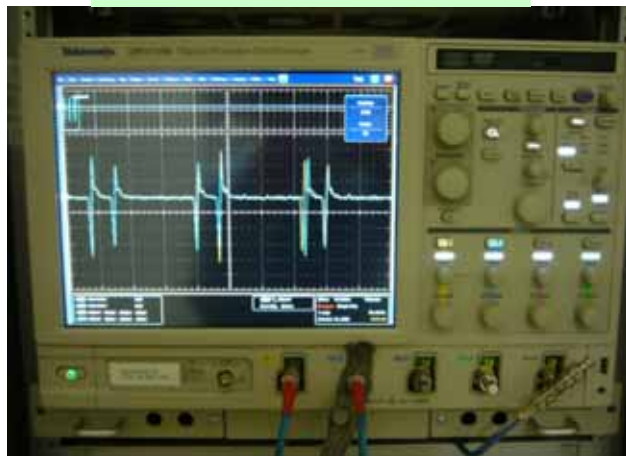
Hole ($\Phi 5$ mm) for e- mode

“Optics Design”

=>

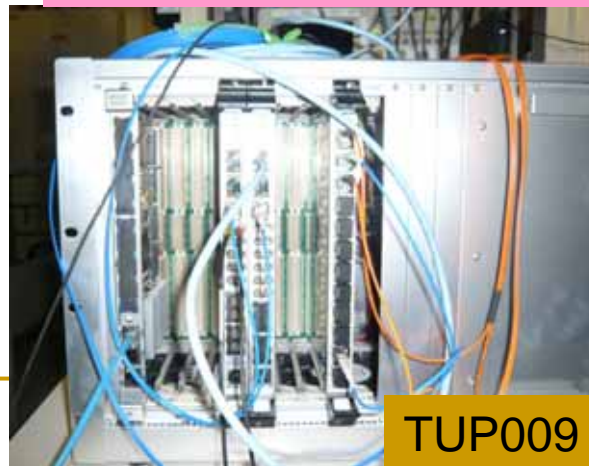
“Design and Performance of Optics for Multi-energy Injector Linac”

Fast BPM-DAQ



M. SATOH/ KEK Linac Control

Fast Timing System



TUP009

Pulsed bend



Linac2008