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MOPB002

Positron Injector Linac Upgrade for SuperKEKB

(4 challenges in the upgrade)

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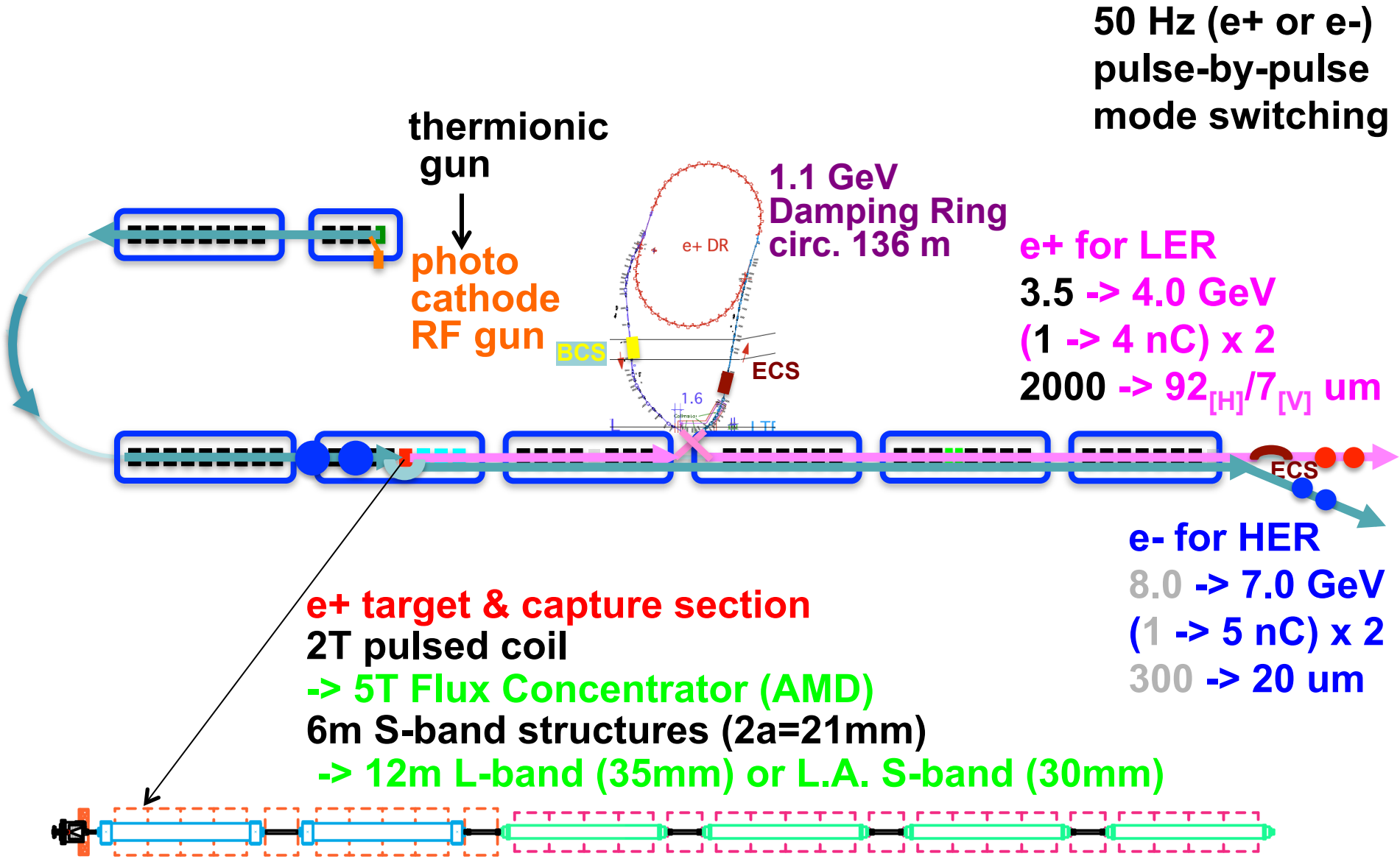
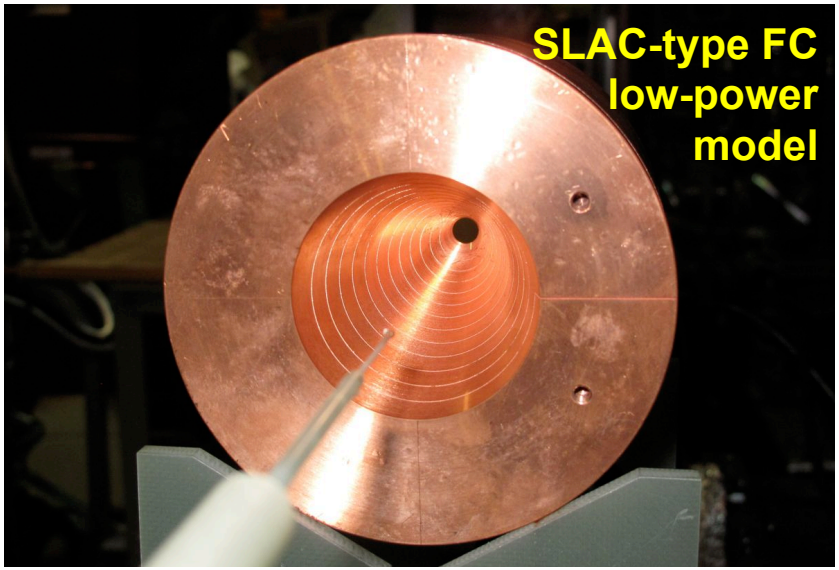
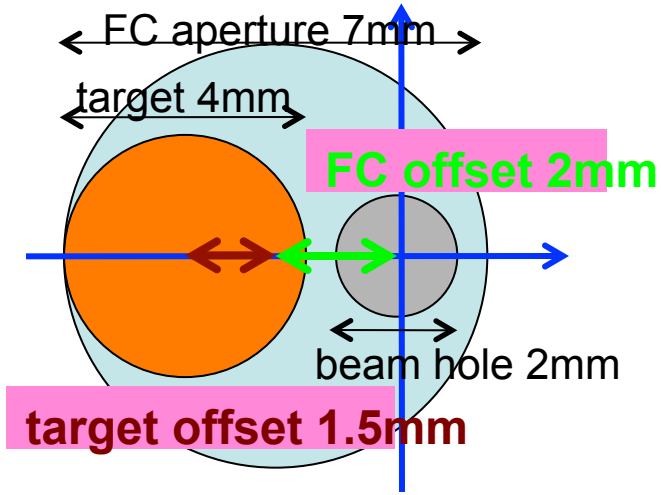
SuperKEKB Injector & e+ source



(1) Can we develop Flux Concentrator?

- **Flux concentrator**:
  eddy current driven
  5-T pulsed solenoid
- **Spiral** slit FC or
  Straight slit FC ?
- No **water leaks** and
  No **breakdowns**
  in operation ?
- **FC offset** and
  Target offset OK ?
  e+ yield reduced ?



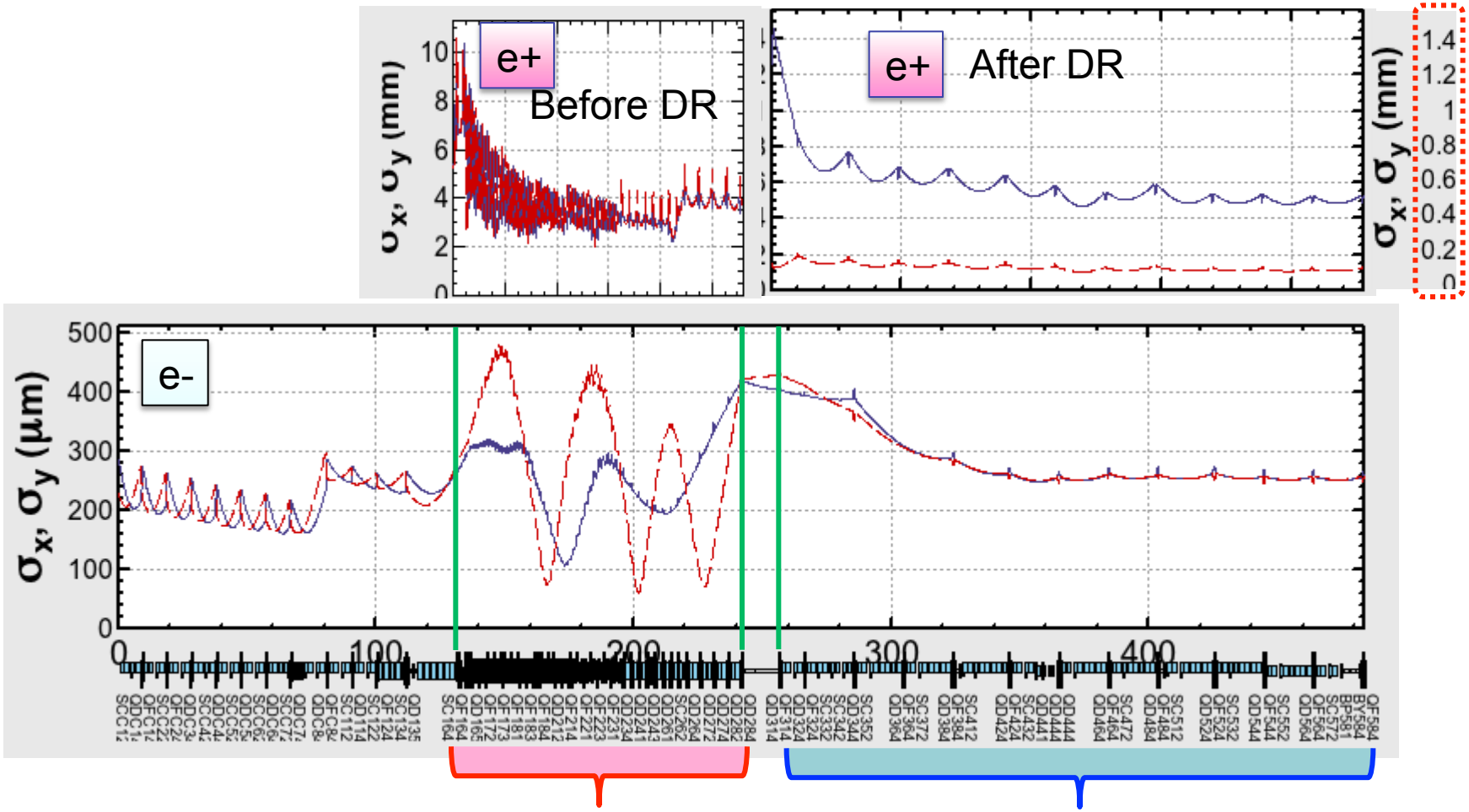


(2) Can we eliminate satellite particles?

- e+ capture in deceleration phase
  -> satellite particles
  -> radiation at DR injec.
- co-prime (5/11) L-band frequency capture section effectively reduce satellite particles
- L-band component R&D underway, but construction cost high

- How to survive with S-band capture section ?
  - large aperture S-band
  - high field helps ?
  - deflector ?

(3) Can we manage e^+/e^- compatible optics?



- different energy e+/e- beams in the same Q magnet field
  -> compromised optics
- pulse Qs can be installed in region after DR

(4) Can we catch up with Schedule ?