Domestic Review Report

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- Domestic short review on Jan. 18, 2011.
 -Review only crucial issues inherent in SuperKEKB
 -Improve the presentation for MAC

- Issues are :
1) Electron source design, perspective
2) Emittance growth during the Linac acceleration
3) Optics, dynamic aperture, x-y coupling
   -Tolerance for machine errors, how to achieve them
4) Movable mask system
   - Consistency with the injection acceptance
   - Heat load on the mask surface
5) Background
   - Estimate SR, back scattering, spent electrons
   - How to protect detectors
6) How to collide extremely thin beams
7) QCS design
8) IR vacuum system, assembly process
9) Ring vacuum system

- **Comments**

1) **Electron source**
   - Determine the baseline plan, on which available resource should be focused.

2) **Emittance growth**
   - Correct alignment errors by practical methods.
   - Understand the growth mechanism by machine studies and simulation.

3) **Optics**
   - Analysis of crucial elements, BG, masks, tolerance, …, is extremely urgent. These could turn over the present design.

   - Establish machine error detection methods based on the beam measurement.

4) **Movable mask**
   - Demonstrate the injection acceptance is secured.
   - Re-estimate the temperature rise with a more realistic model. Collect information of graphite coating used in the other accelerators.

5) **Background**
   - Spent electrons lost inside QCS and tip scattering of SR at 9mm ϕ aperture close to IP should be analysed immediately.

6) **How to collide**
   - Analysis of the FB loop using transfer functions is more effective to design the FB system, than particle tracking simulation.

7) **QCS design**
   - Analyze nonlinear field near iron-core magnets immediately.
   - Support should meet the condition on QCS movement causing miss-collision.

8) **IR vacuum**

   - Solve issues related to NEG coating before finalizing the design.

   - Issues are

     QCS thermal shield for the activation,

     lifetime shorten by frequent activation,

     outgas from the coating heated by wall currents.