GLD VTX Summary

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Towards the baseline design

- Inner diameter
  - Study of pair background for various machine parameters
    - Beam pipe radius is determined from the consideration of the shape of the pair-background core
    - High Luminosity option requires larger beam pipe radius and R_{VTX} than Nominal option by 5 mm or more for all detector concepts
    - Andrei's new parameters for High Luminosity option are very preferable from the viewpoint of background. His approach should also be applied to 500 GeV case if possible
  - RVTX impact on physics (by Sonja Hillert)

Critical R&D

- Sensor R&D
  - CCD is an established technology, but there are several non-trivial issues
    - Very fine pixel
    - Radiation hardness of fully depleted CCD
    - Multi-port readout
    - Large area sensor
  - First of all, get any sample (\\\/$$$)
- Readout electronics
  - FPCCD gives signal charge less than 1000 for inclined tracks

The followings are common to all VTX options/Concepts

- Wafer thinning and the support structure
- Endplate design
  - Material budget
  - Cabling
- Power consumption and cooling

Homework

- Optimization of layer configuration
  - Super-layers or equi-distance configuration
  - All barrel or with forward disk ← Material budget of endplate for ladders
- More study on the background rejection by hit-cluster shape (effect of δ-ray)
- Study of GLD features to compensate for the disadvantage (larger R) of GLD VTX in quark/anti-quark tag
  - Effect of PID (π/K, leptons)
  - Low momentum tracking