

SVT integration – changes to the global support structure

28 April 2025

On behalf of the SVT mechanics and integration group

SVT Design Meeting

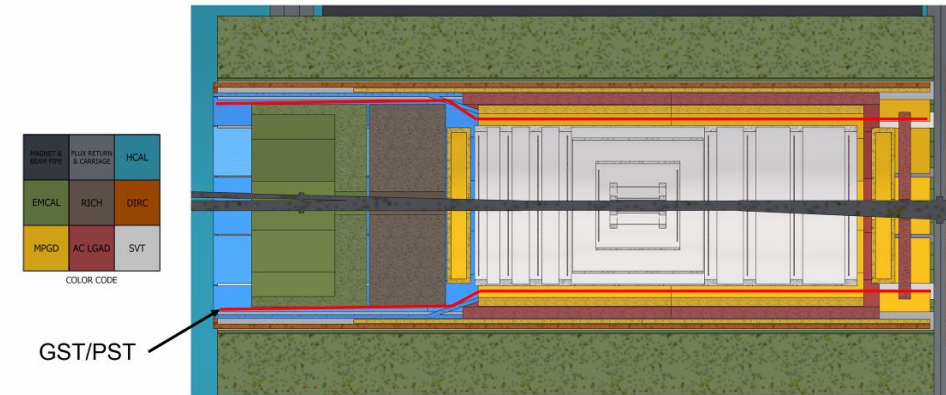
- Changes to make detectors more serviceable
 - Remove half detectors in exp. hall
- Single GST/PST, change diameter
- SVT silicon disks removable
 - Individually? Delicate to slide?
 - Beampipe offset a challenge
 - Inner most disk always stays
- Service/cable trays slidable outside of new GST for cymbal and TOF
 - May gain additional 2cm of radial space
- Adjustable central axis $\sim 10\text{mm}+$ (15mm nominal), pre-adjust VS in-situ
- TOF array might go “flat” with overlaps

- Leave space for MPGD disk to expand and then remove
 - Temporary rails/mechanism
- Rails from DIRC and outer MPGD to mount TOF and cymbal (and pfRICH and EMCAL with pass through holes in GST)

New GST + PST Envelopes model

GST and PST combine with changing diameter
Backwards flairs out for SVT services around EEEMCal/pfRICH

TOF + CYMBAL removed from forward direction
Requires 1/12 of SVT services to be detached



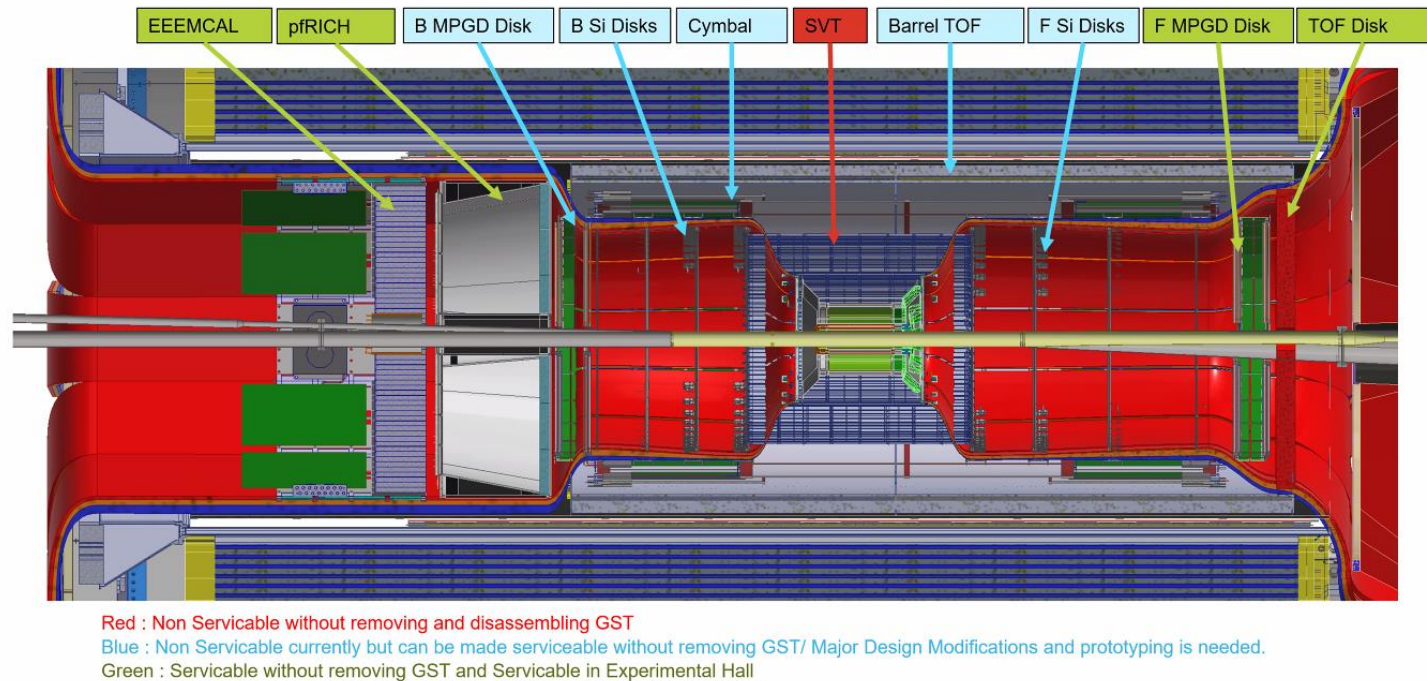
EEEMCal and pfRICH can be attached to DIRC rails
Needs more clearance, but simplifies PST

Forward TOF OD needs to be reduced to allow PST to end

Serviceability Motivation and Thermals

- SVT enclosed volume will heat up
- Cooling, flow, inlets, outlets
- Thermo-mechanical effects (CTE)
- SVT services nominally stay inside new GST
- Possible thermal membrane between Silicon disks and MPGD disks

GST Model with Detectors



Electron-Ion Collider

23 April 2025 SVT Notes

- Stonybrook SVT Workfest
 - Have mature design proposal
- GST
 - Two big rails at 3 and 9 o'clock
 - No adjustment of rails outside GST
 - Adjustment only for beampipe-SVT-assembly specifically
 - Two halves? Split on XZ plane?
 - At least region around SVT
 - Still half disks
 - Or everything on rails?
- Services space still a challenge (WIP)
 - Strong implications for envelope
- Service counting/estimates
 - Regions of responsibility
 - Roland planning to handle from SVT envelope “exit” onward
 - Ernst/Laura to discuss next week
 - Patch panel, other details need space dedicated (into overleaf document)