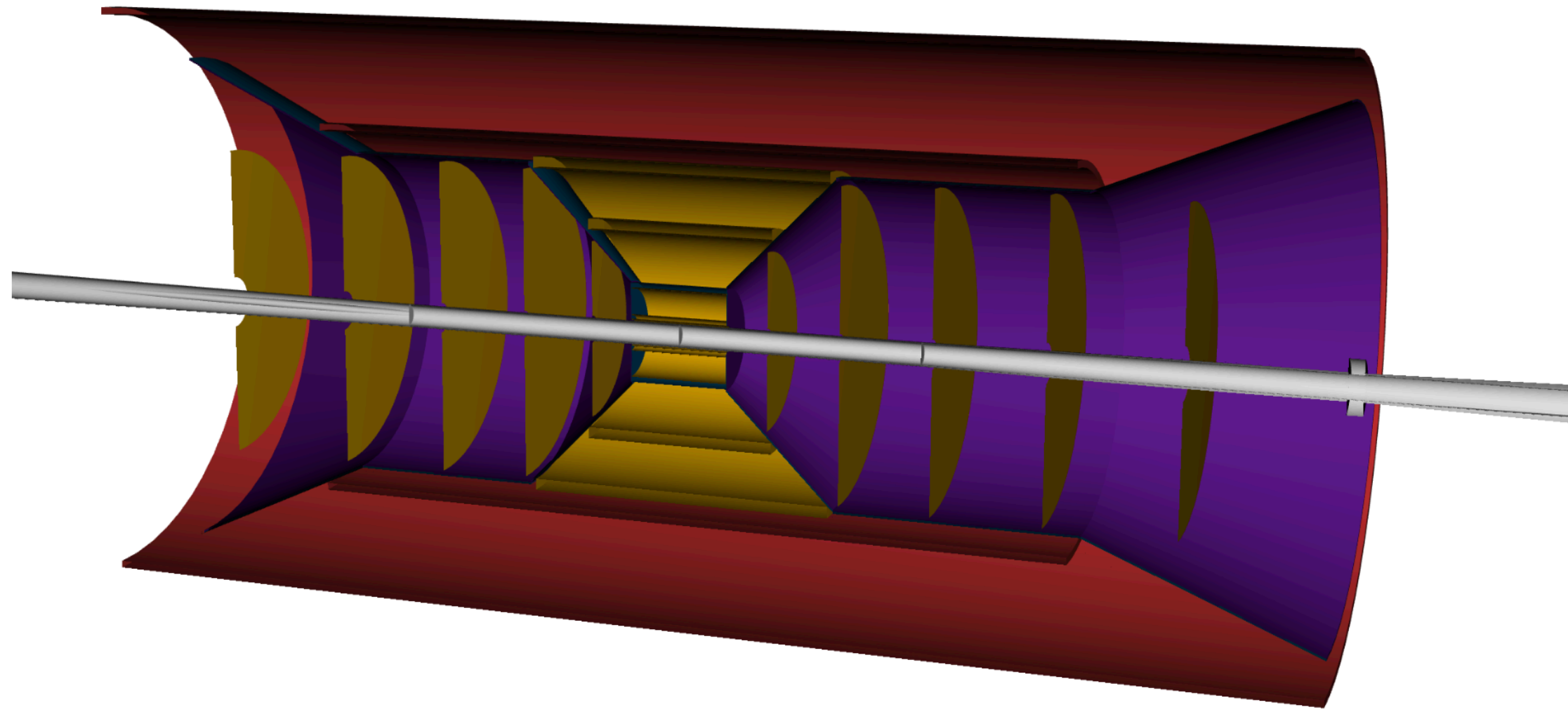# Update on Geometry

Re-optimized baseline geometry discussed several times;
- 2 curved silicon vertex layers, r = 36, 48 mm, l = 270mm
- 1 curved silicon dual purpose layer r = 120mm, l = 270mm
- 1 stave-based sagita layer r = 270 mm, l = 540 mm
- 1 stave-based outer layer r = 420 mm, l = 840 mm

- 5 disks on either side of the nominal IP,
    - |z| = 250, 450, 700, 1000, 1350 mm
    - Inner radii >= 36 mm, outer radii <= 430 mm

Change necessary in the electron (negative) arm to accommodate new constraints mostly from PID, c.f.
- GD/I 2022-09-25, https://indico.bnl.gov/event/17295/
- EPIC 2022-10-06, https://indico.bnl.gov/event/17289/

New envelopes as of September 29, c.f. https://eic.jlab.org/Geometry/Detector/Detector-20220929172703.html
- z_{min} = -1186 mm, z_{max} = 1800 mm, r_{out} = 600 mm

Propose a pragmatic approach of only "moving" the outermost disks in the electron direction inwards,
- z = -250, -450, -650, -900, -1150 mm
- minimal (or no) changes to inner and outer radii,
- inevitable loss of lever-arm in tracking, e.g. ~22% for -2.5 < η < -2.0

Alternatives considered:
- dropping outermost electron disk; results in inability to track for η < -3.2, suboptimal use of available space,
- moving innermost disk inwards to partially recover lever arm for -2.5 < η < -2.0; loss of commonality with hadron arm, acceptance near η ~ -2.6 - defer for now,
- changing the angle of the inner projective cone; seemingly inevitable to introduce additional material in the electron direction for η > -1
-   no good arrangement to make the hadron-arm single-projective,

Not considered here / so far:
- r_{out} = 600 mm is now a combined envelope for MAPS and MPGD; could consider expanding the MAPS radius,
- small insert-like disks at large -z for far backward (electron) tracking to recover (and possibly extend) the tracking lever-arm in this region.