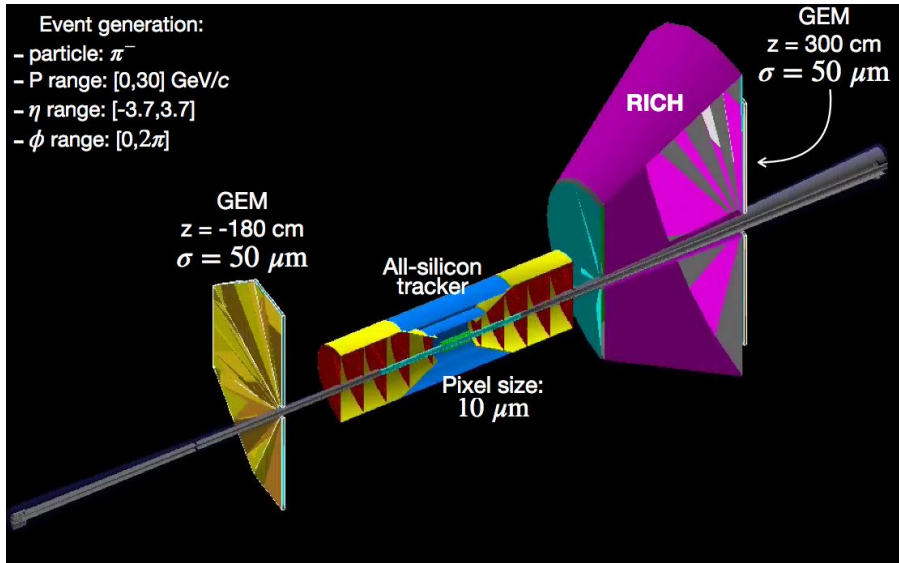


# What is the next configuration? Discussion on B-2/N-2/P-2

Tracking WG  
09/07/22

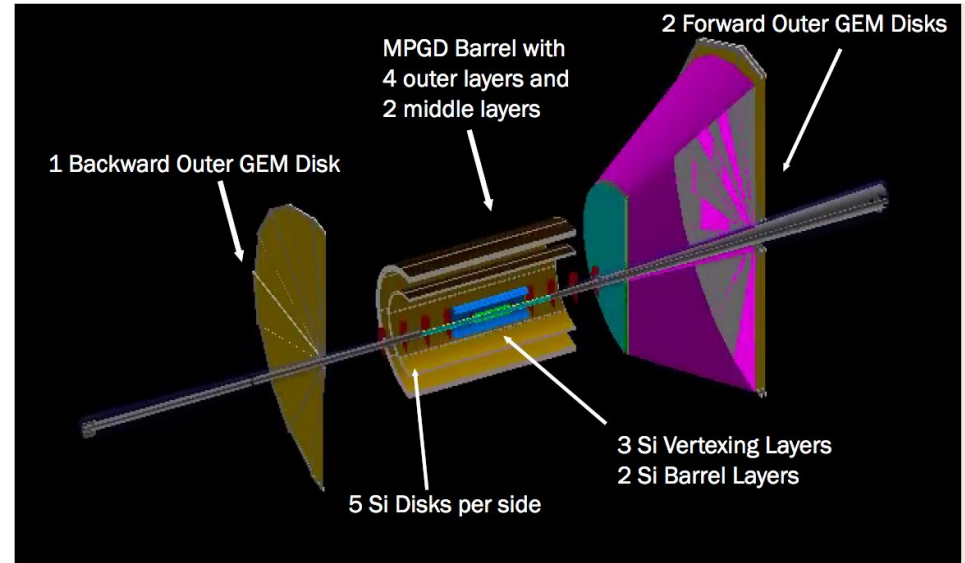
# Current baseline (minimal) configurations

## B-0.0/P-0.0/N-0.0



- 2 Si vertex layers
- 4 Si barrel layers
- 5 + 5 Si Disks
- Outer GEMs on hadron and electron sides

## B-1.0/P-1.0/N-1.0



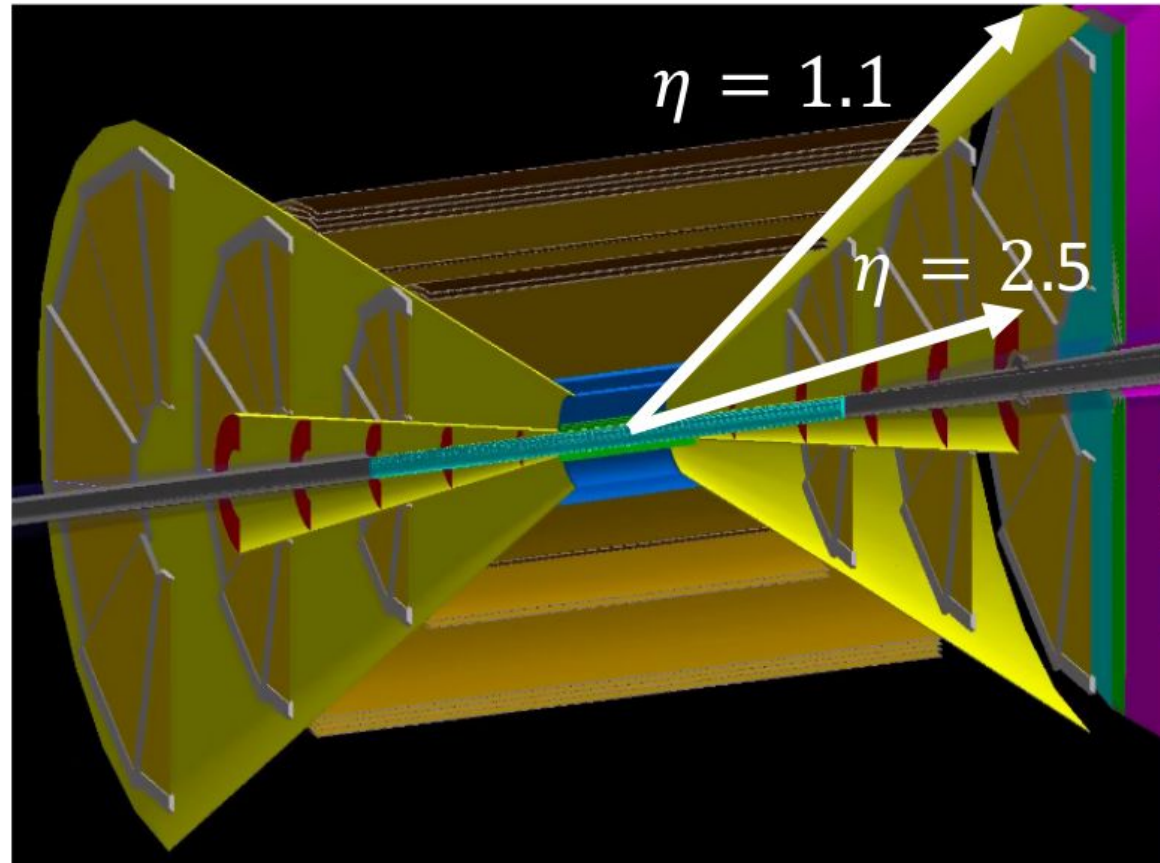
- 3 Si vertex layers (longer wrt B0)
- 2 Si barrel layers
- 6 MM barrels
- 5 + 5 Si Disks
- Outer GEMs on hadron and electron sides

# Current baseline (minimal) configurations

- Both B-0/N-0/P-0 and B-1/N-1/P-1 meet most of PWG requirements
- Recent updates on supports and services raised some concerns on the total material budget (example: [Shujie's talk](#))
  - Engineering work converging on a first implementation of the full support and services coming soon

# Projective hybrid idea

- Proposed to update the B1/N1/P1 baseline
- Pros:
  - More hermetic
  - Support and services in narrow eta intervals
- Cons:
  - Too small inner Si disks
  - Non trivial integration solution



# Task from the Integration WG

Find a mix of Si and MPGDs that has:

- **minimal material**
- best tracking performance
- doable integration
- some [technology] overlaps for cross calibration
- not necessarily N/P symmetry
- reasonable cost

# B-2.0

All the studied configurations meet the requirements

Setup:

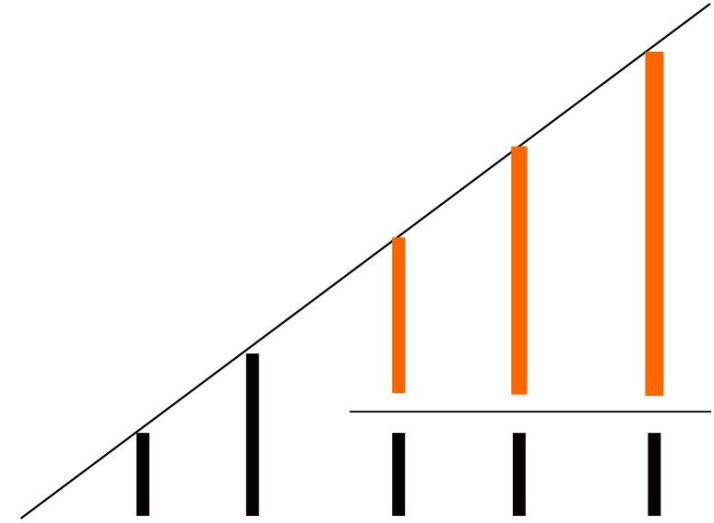
- Projective layout: support and services at  $\eta = \pm 1.1$
- Vertexing layers: two or three?
- Silicon tracking layers: is two enough?
- MPGDs layers: 2+2 already enough?

Open questions:

- And what if we add an AC-LGAD layer at  $\sim 40\text{cm}$ ? Do we have a realistic AC-LGAD in simulation?
- Is the number of hits enough for track finding?

# P-2.0

- Current proposed versions lack in technology overlaps
- Possible solution:
  - Overlap between **Si** and **GEMs**
  - Si close to the beam pipe for occupancy and tracking requirements
- Integration:
  - Outer Si disks as separate entity wrt the Si system
  - But where are the services running?



# N-2.0

- Open points:
  - Technology overlap
  - Minimal material budget to get the best e reconstruction
  - PWG requirements are not met at large eta
- Possible solutions:
  - Move the outer GEM plane in front of the mRICH: better Bdl
  - Use any available space to extend Bdl (bigger spacing of Si disks)
- Integration:
  - Minimize material for support and services