



Athena Tracking WG Update

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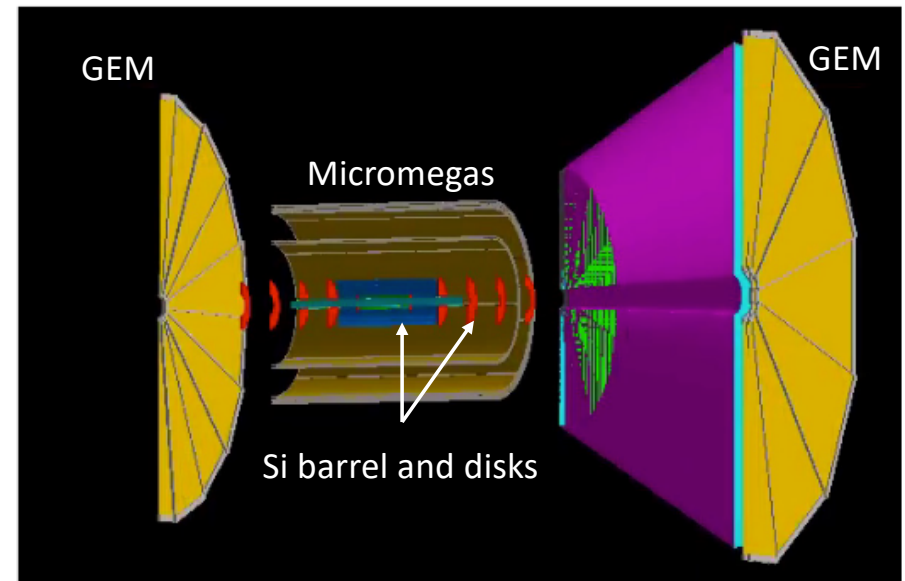
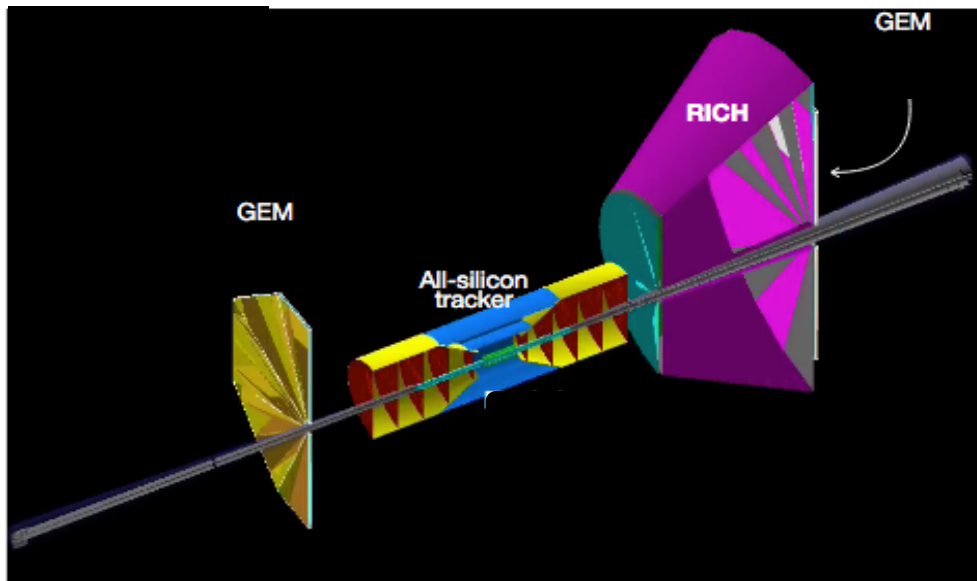
Athena Biweekly Meeting
July 8th , 2021

Detector Configurations: Reference Setup



- Report from our (Tracking WG) side:
 - **Two minimal detector concepts presented**
 1. B-0.0, P-0.0, N-0.0 (all-silicon + 1+1 GEMs)
 2. B-1.0, P-1.0, N-1.0 (hybrid micromegas-based + 1+2 GEMs)

<https://indico.bnl.gov/event/12016/contributions/50212/attachments/35577/58093/20210629-ATHENA-baseline-det-cfg.pdf>



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 - **Two minimal detector concepts presented**
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 2. B-1.0, P-1.0, N-1.0 (hybrid micromegas-based + 1+2 GEMs)
 - Benchmark figures defined
<https://indico.bnl.gov/event/12016/contributions/50212/attachments/35577/58093/20210629-ATHENA-baseline-det-cfg.pdf>
 - Both configurations are currently under analysis in Fun4All
 - **Minimal detector concept 1. is currently being finalized in DD4HEP:**
 - GEM just implemented in addition to the barrel part
 - possibly within this week or so by SWG colleagues
 - **Implementation of minimal detector concept 2. also ongoing in parallel:**
 - silicon barrel layers + disks already there (geometry needs adjustments)
 - GEMs also there (as in baseline 1.)
 - MM layers being finalized
 - Began working with project to implement detector service and supports

Detector Configurations: Subsystem Details



- Both configurations are currently under analysis in Fun4All
- Began working with project to implement detector service and supports
- Reference detector details on integration wiki: <https://wiki.bnl.gov/athena/index.php/Tracking>
 - Baseline configuration subdetectors also linked to appropriate detailed tables

Current Configurations [\[edit\]](#)

Explanation of configuration labels can be fo

- [Baseline](#) [\[edit\]](#) (B-0.0, P-0.0, N-0.0)
- [Baseline+](#) [\[edit\]](#) (B-1.0, P-1.0, N-1.0)

Barrel B-1.0 [\[edit\]](#)

- Silicon Tracker
- [MPGD \(cylindrical\)](#)
- HP-DIRC
- EMCAL
- HCAL (Fe/Sc)

Forward P-1.0 [\[edit\]](#)

- GEM/MMG Layer
- Silicon Disks
- The rest same as in Baseline_Configuration

Backward N-1.0 [\[edit\]](#)

- GEM/MMG Layer
- Silicon Disks
- The rest same as in Baseline_Configuration

MPGD Trackers (B-1.0) [\[edit\]](#)

Micromegas Barrel (2 + 4 barrel layers)

R (cm)	Length (cm)	Resolution	Active Area Material (X/X0 %)
47.715	188.0	150 um (r-phi) x 150 um (z)	0.4
49.57	188.0	150 um (r-phi) x 150 um (z)	0.4
71.89	188.0	150 um (r-phi) x 150 um (z)	0.4
73.75	188.0	150 um (r-phi) x 150 um (z)	0.4
75.61	188.0	150 um (r-phi) x 150 um (z)	0.4
77.47	188.0	150 um (r-phi) x 150 um (z)	0.4