Tracking performance with updated geometry

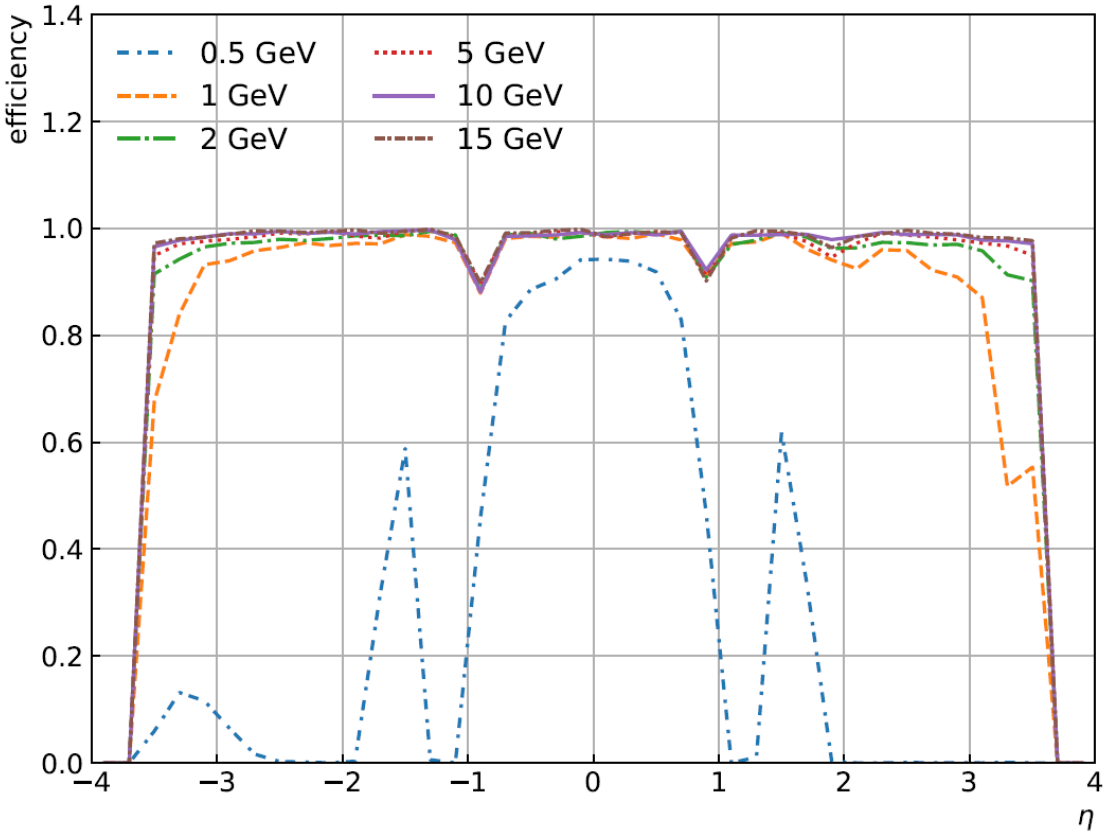
Barak Schmookler

Geometry updates

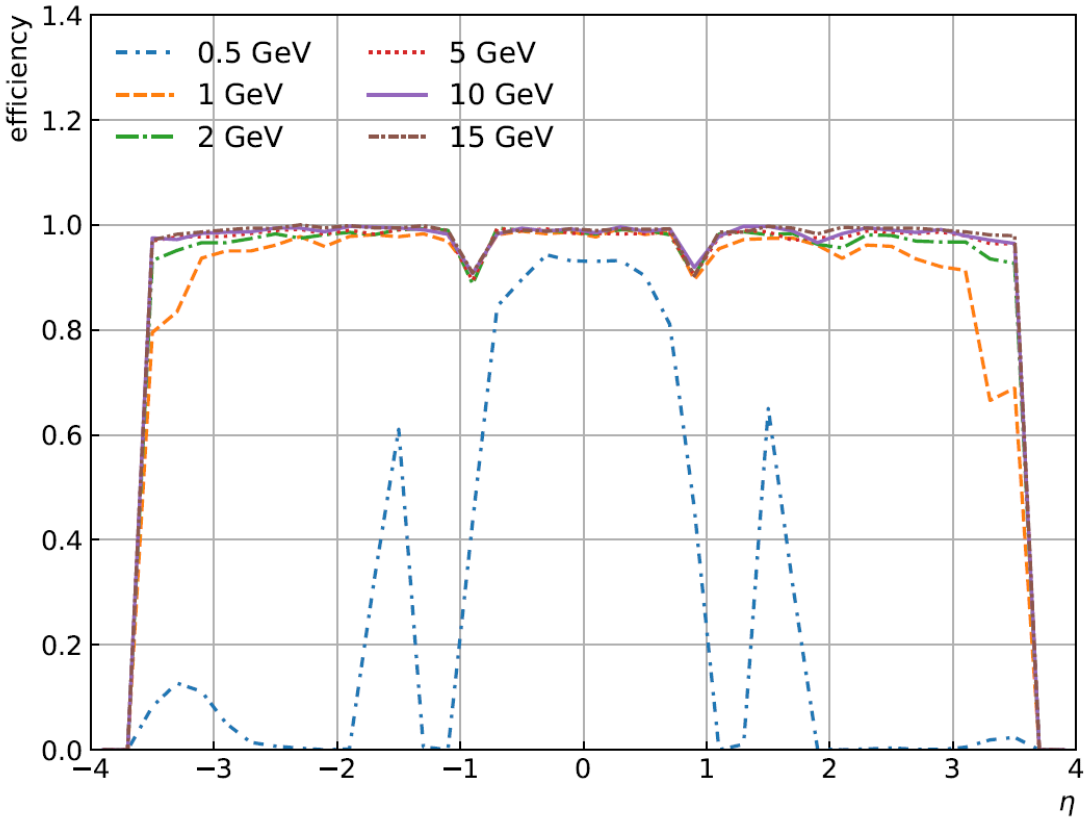
- Simulation geometry has been updated for consistency with September 2025 CAD model: https://github.com/eic/epic/pull/986.
  1. Updated outer two forward SVT disk positions from 100 cm and 135 cm to 95 cm and 120 cm, respectively
  2. Updated forward MPGD disk position from 150 cm to 128.5 cm
  3. Shifted outer MPGD barrel z module range
  4. Minor updates to barrel MPGD radial positions; and minor updates to backward MPGD sizes
- Acts material map has been updated to reflect this change: https://github.com/eic/epic/pull/1068.
- In this presentation, I check the updated tracking performance using single charged pion events.

Single-particle tracking performance: Efficiency

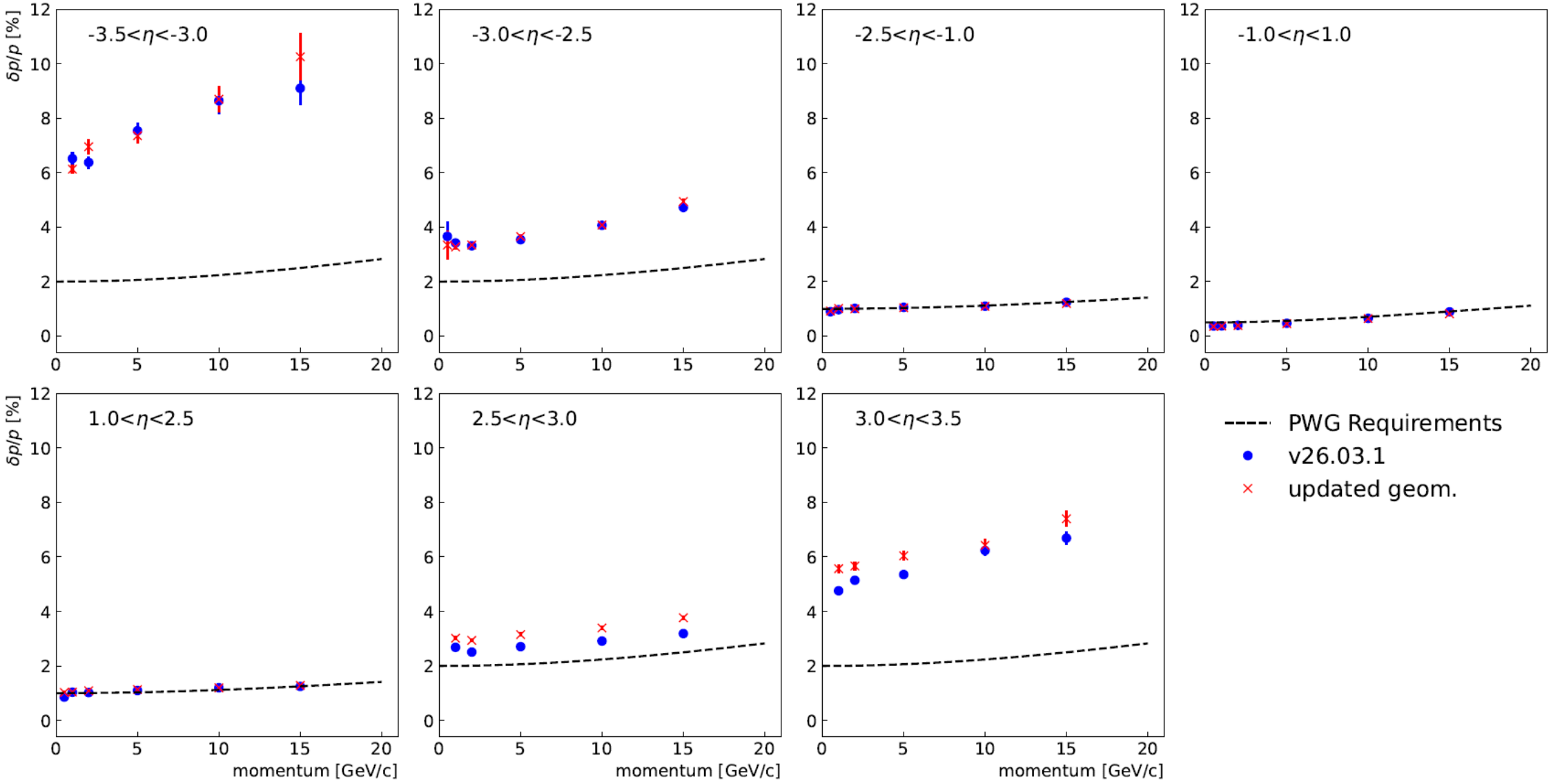
Version 26.03.1



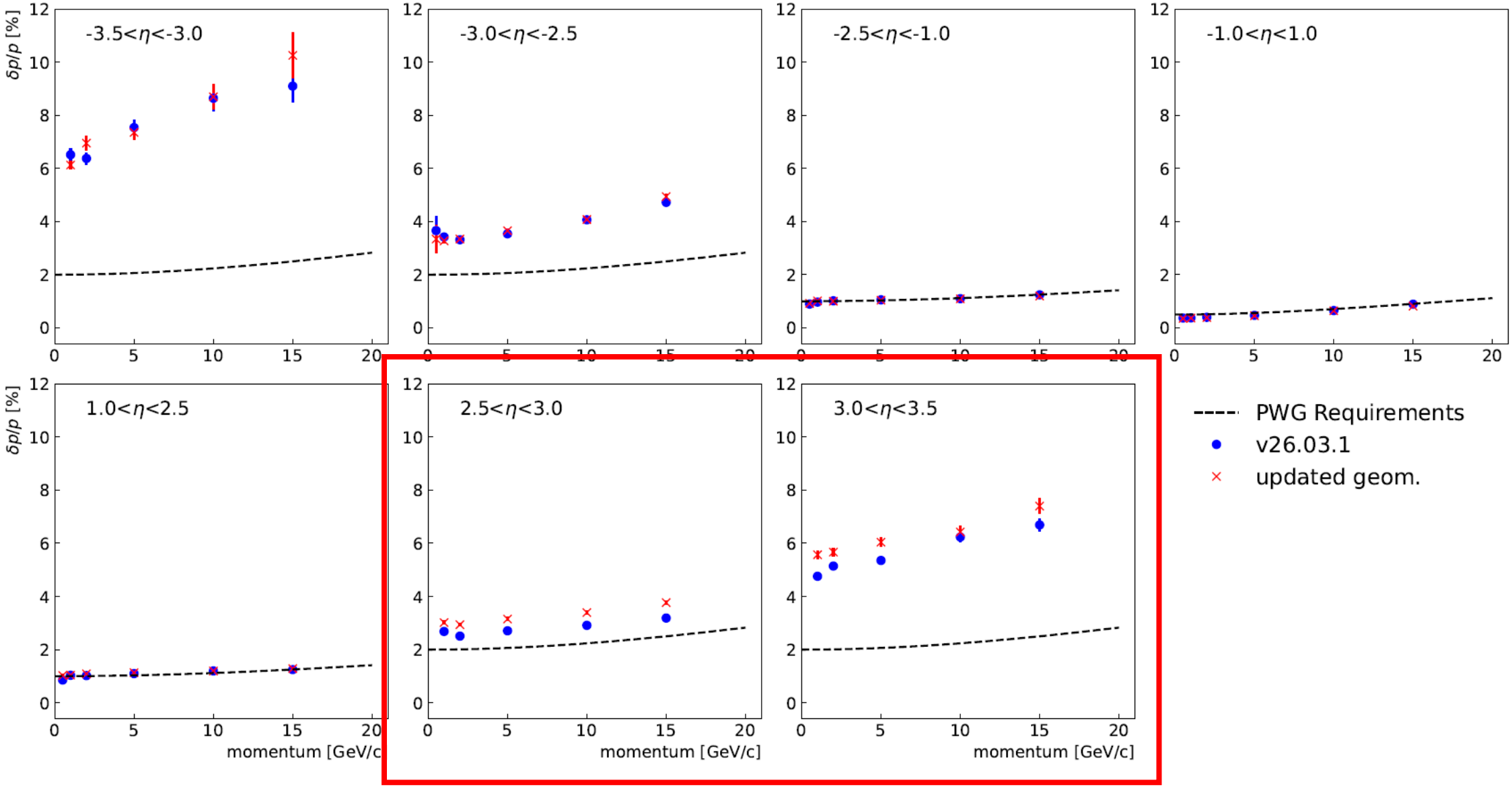
Updated geometry



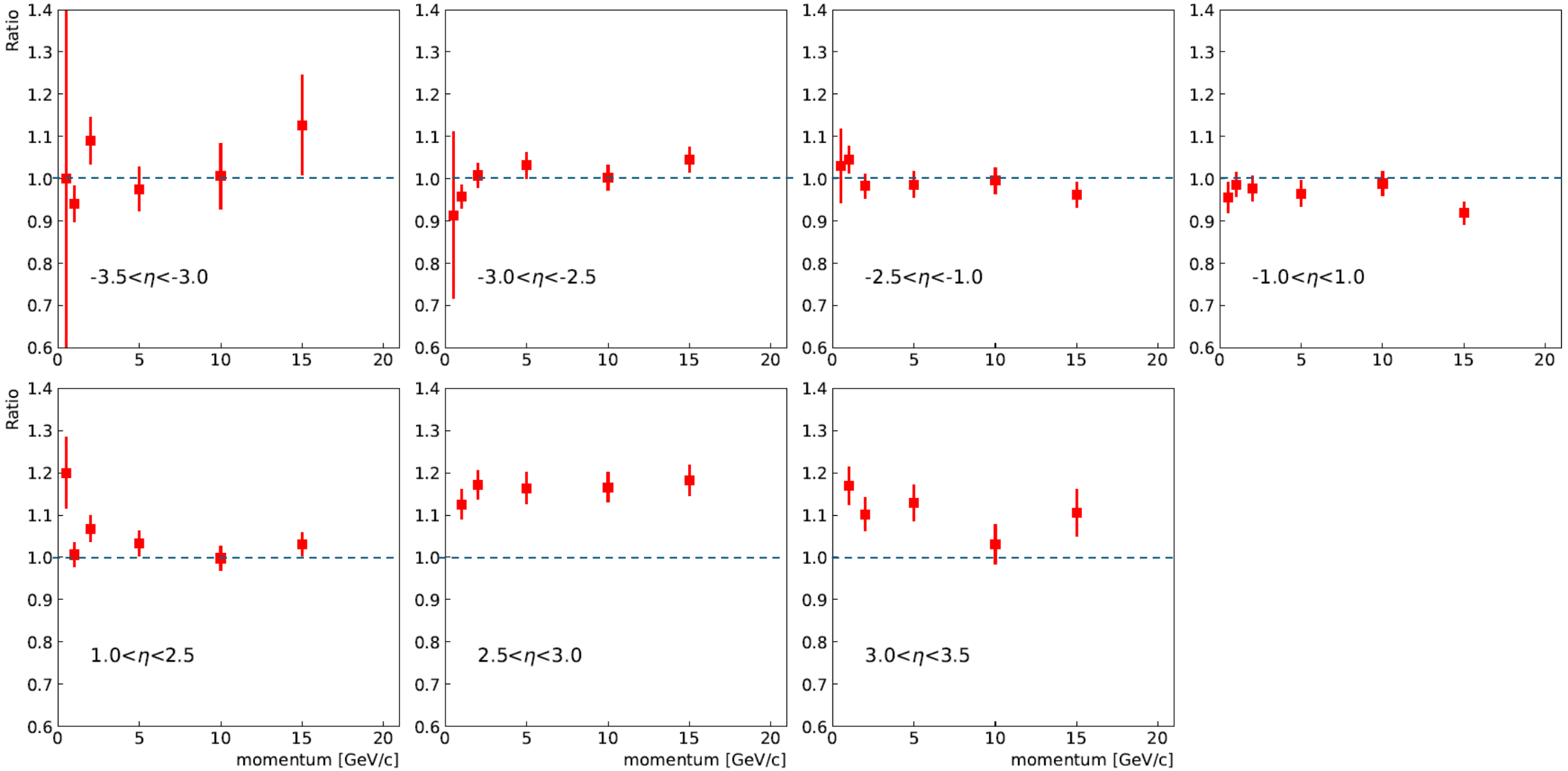
Single-particle tracking performance: Momentum Resolution



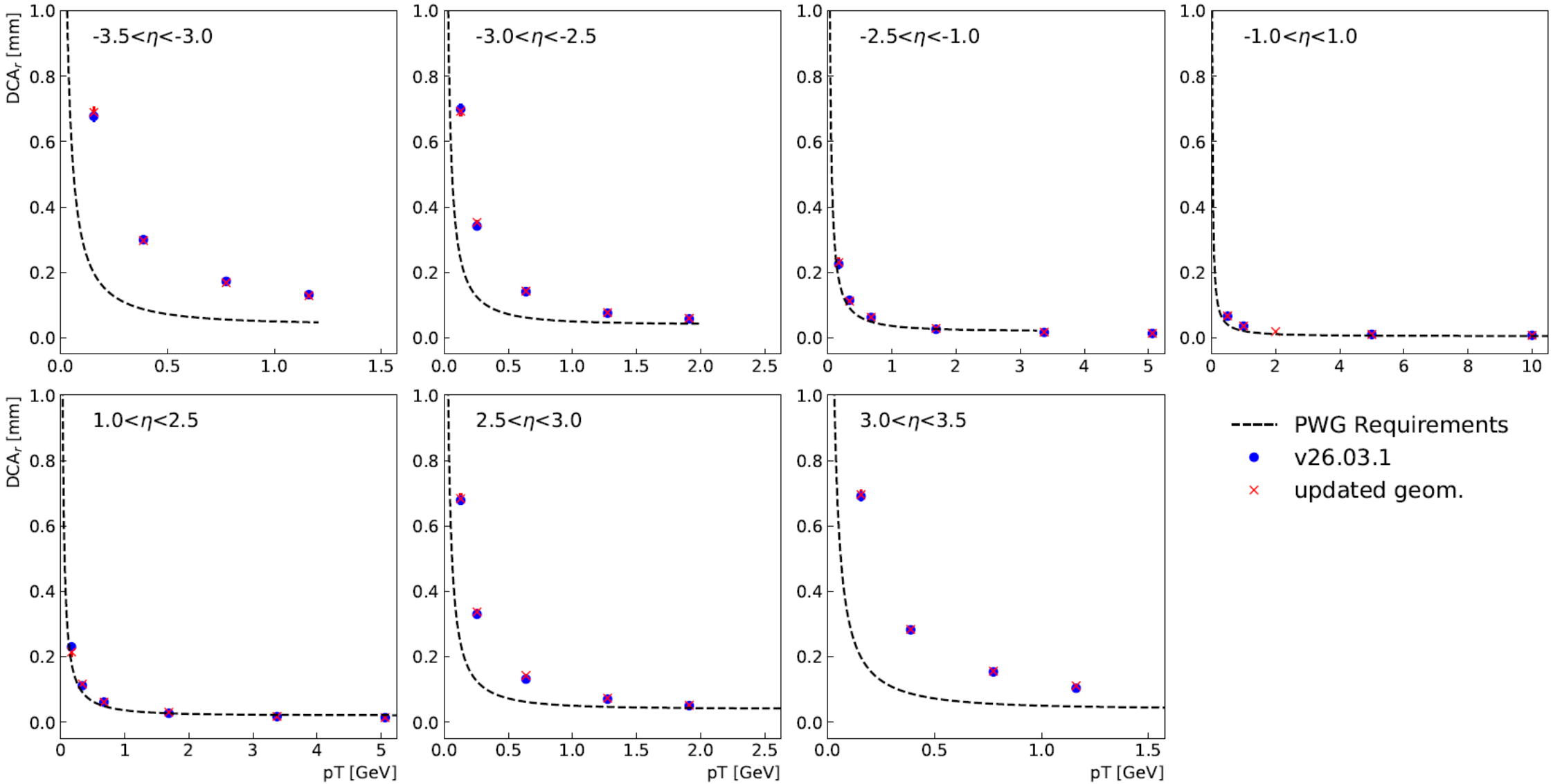
Single-particle tracking performance: Momentum Resolution



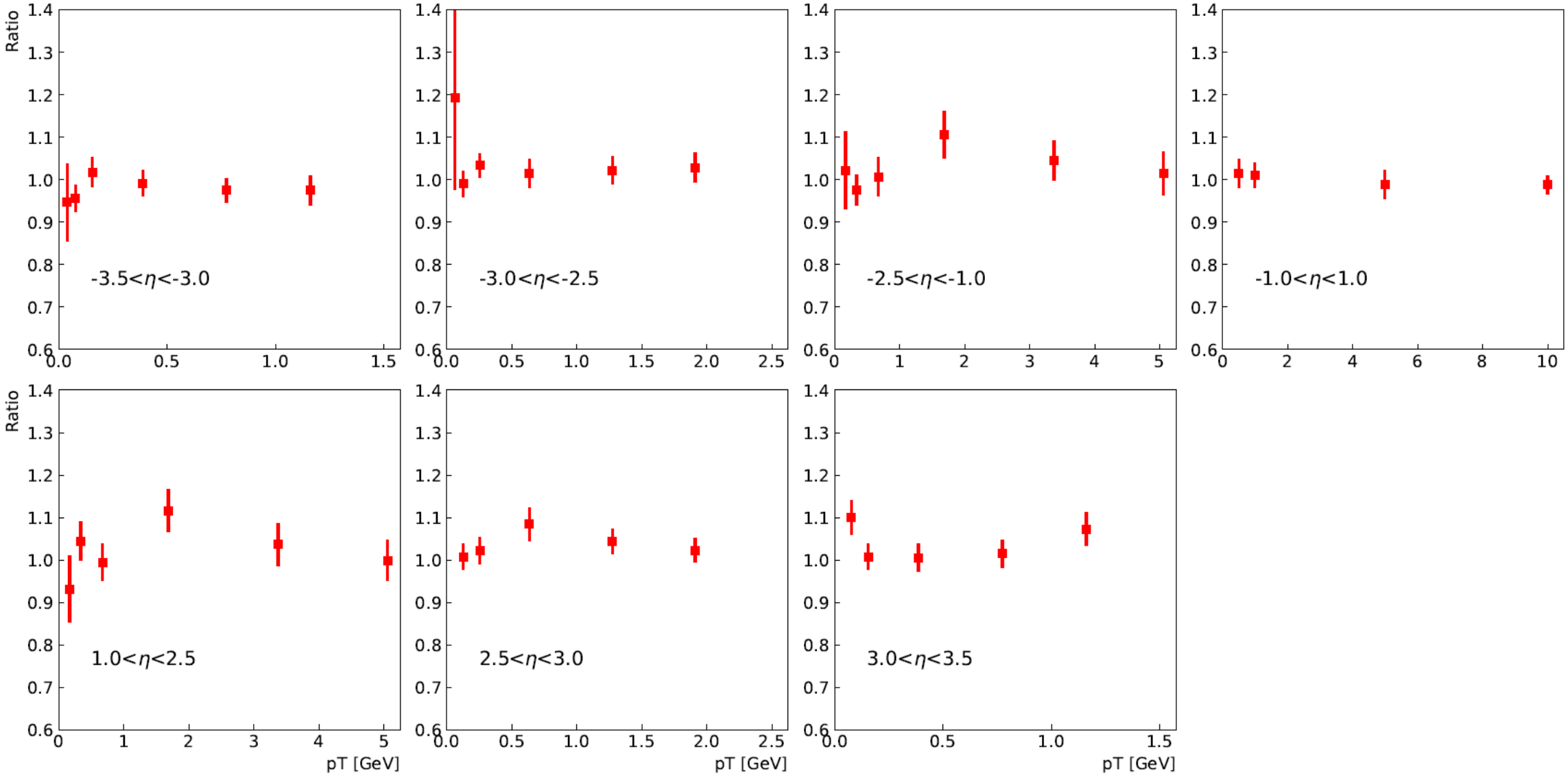
Single-particle tracking performance: Momentum Resolution



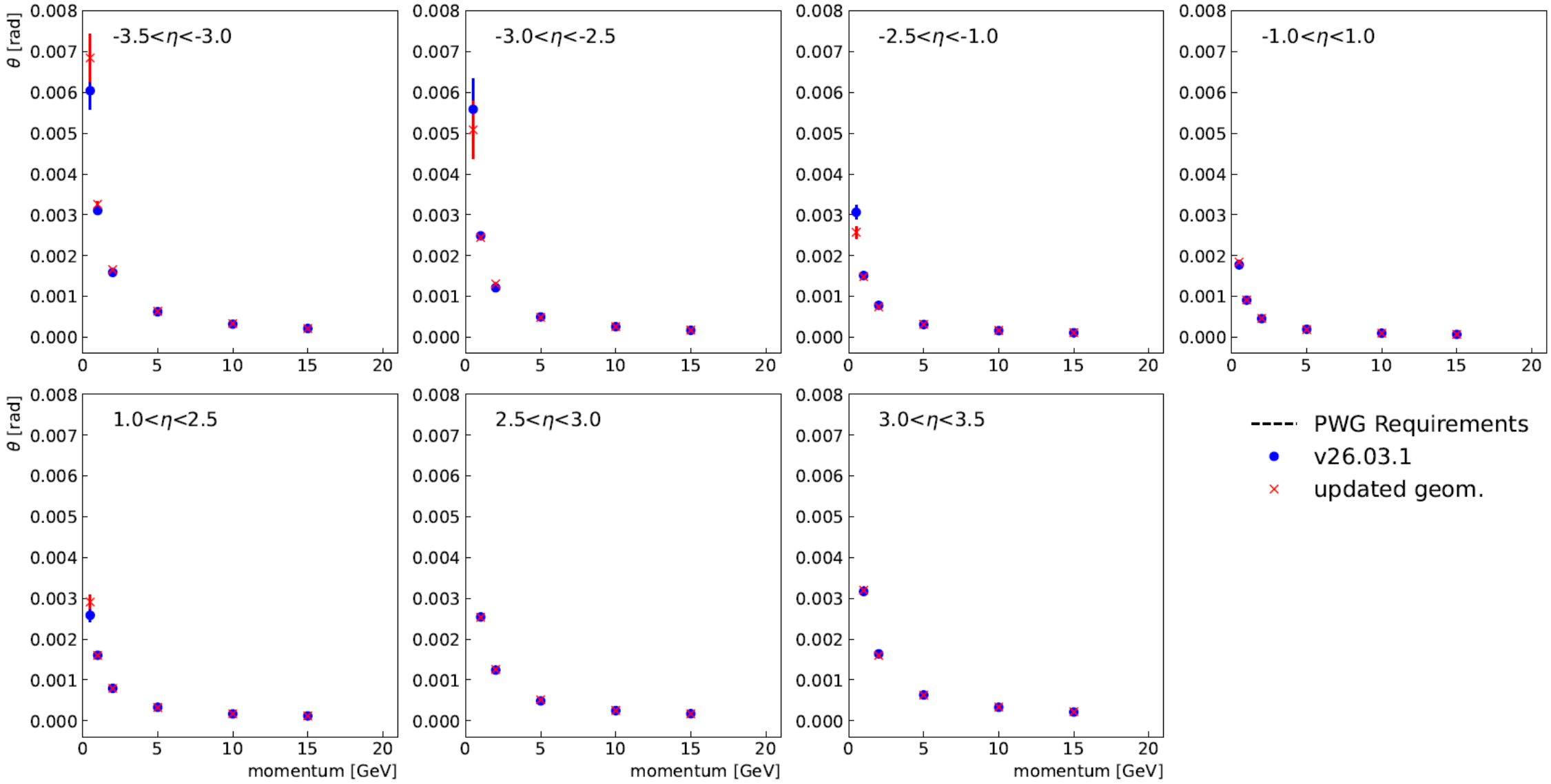
Single-particle tracking performance: DCA_T



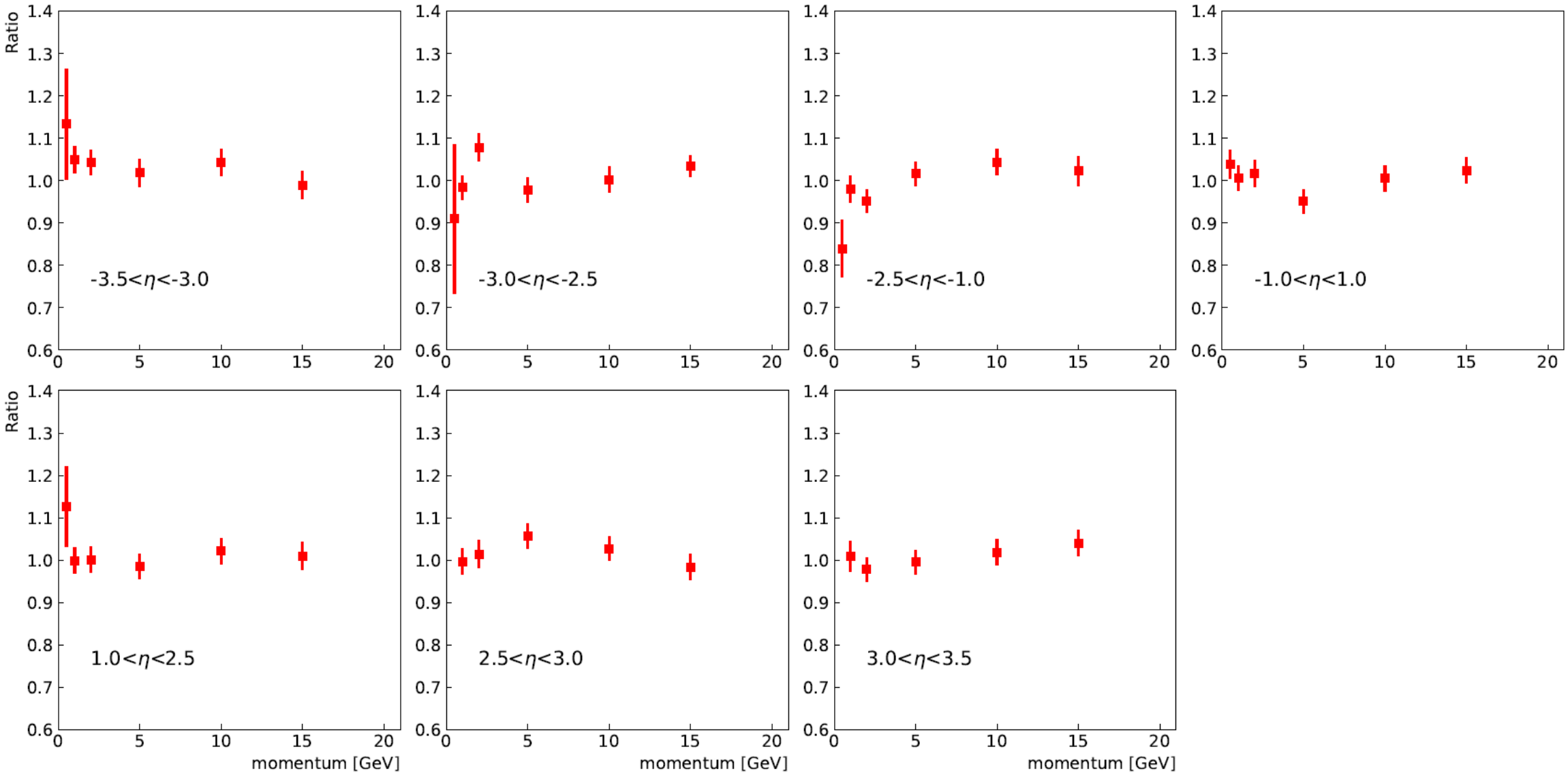
Single-particle tracking performance: DCA_T



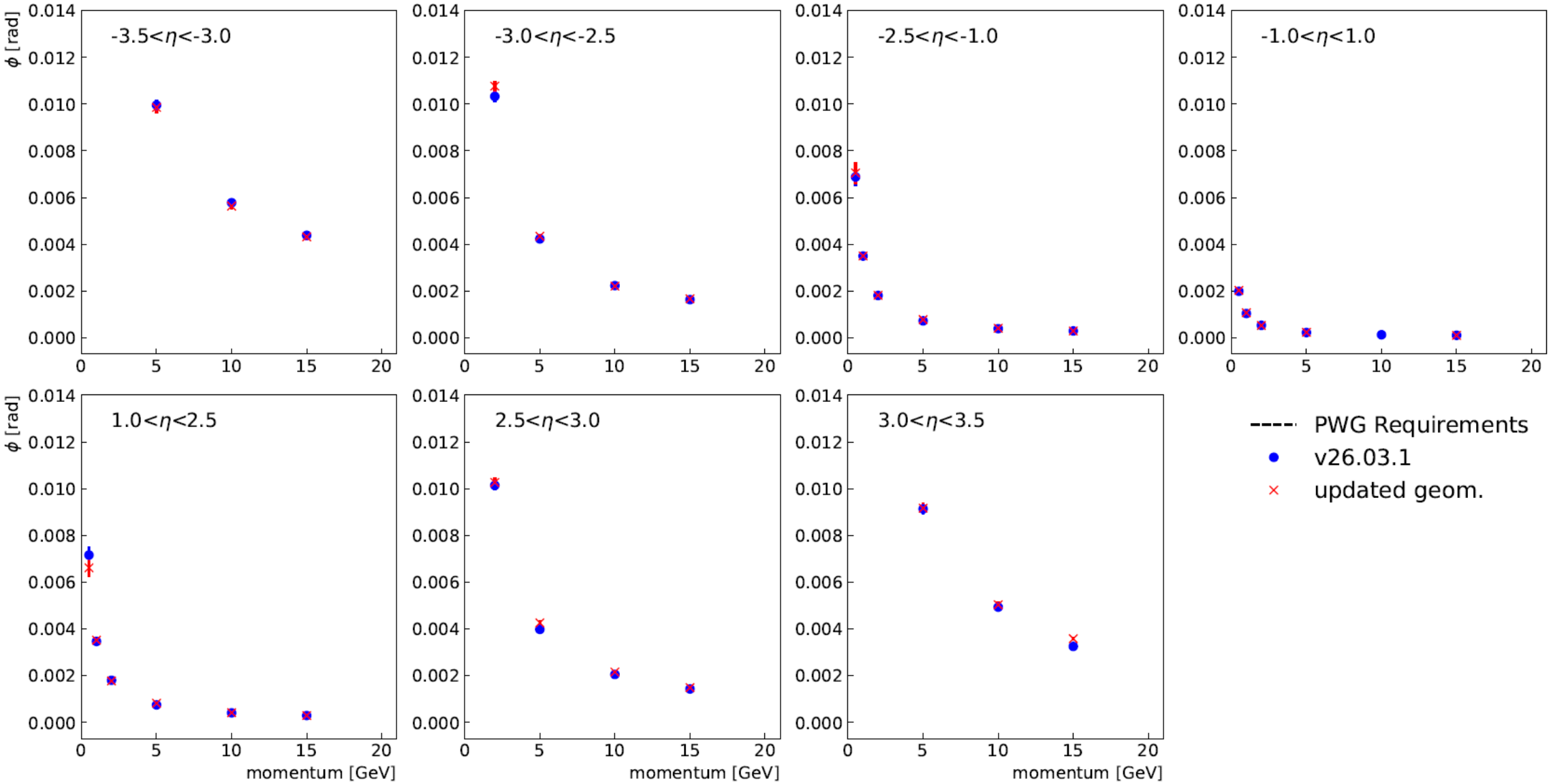
Single-particle tracking performance: Theta



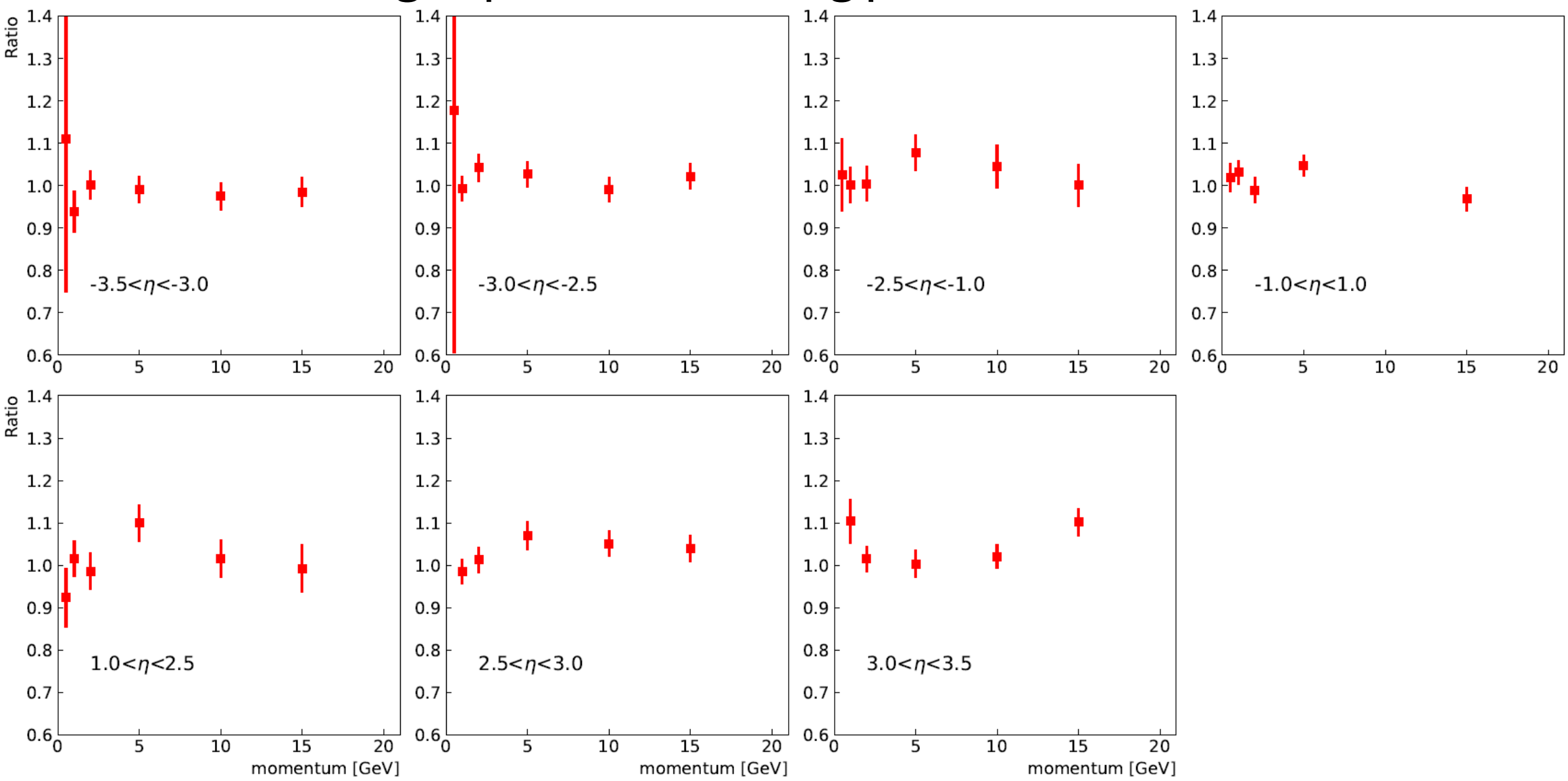
Single-particle tracking performance: Theta



Single-particle tracking performance: Phi



Single-particle tracking performance: Phi



Conclusions

- Tracking geometry for April campaign has been updated to be consistent with envelopes in September 2025 CAD model.
- Impact on momentum resolution in forward endcap is on the level of 10-15%.
- Impact on the other single-particle variables is either between 5-10% or negligible