

Overview of tracking and vertexing benchmarks

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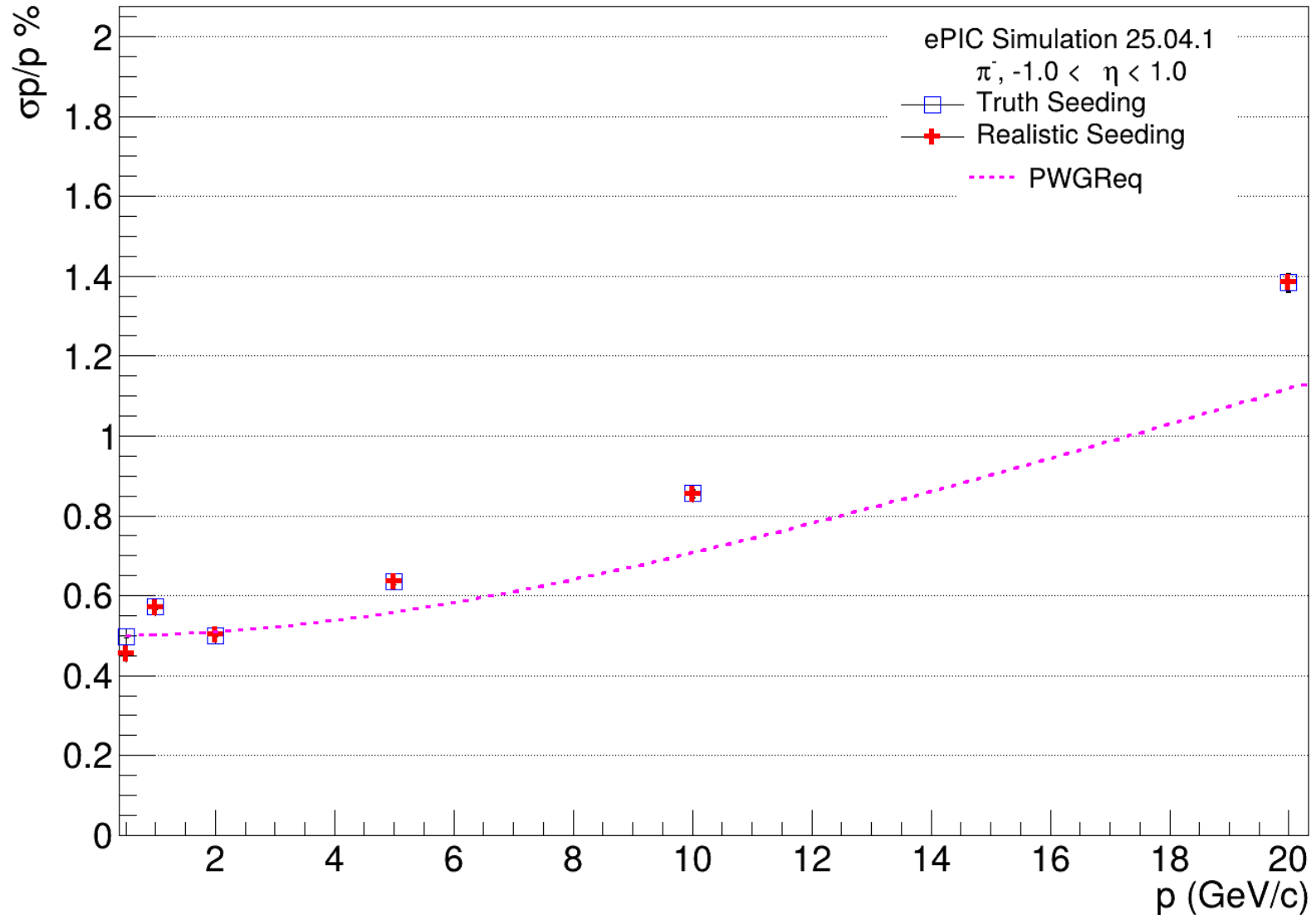
Available analysis codes

- Tracking and vertexing related benchmarks are available in the [Detector Benchmarks](#) repository.
 1. Single particle performance benchmark that can either run locally or on the output of simulation campaigns. Work by Shyam Kumar.
 2. DIS tracking and vertexing benchmark. Work by Barak Schmookler and Khushi Singla.
- Additional analysis codes are available in the [Tracking Snippets](#) repository.

Single-particle tracking benchmark

- Benchmark that shows track reconstruction performance for generated single-particle events.
- The benchmark can be run on local simulations or on the output of the simulation campaigns.
- Plotted quantities include momentum resolution, number of tracker hits, and hit position distributions.
- Ongoing work to include pull distributions for reconstructed track parameters.
- Future updates to include efficiency and residuals for measurements and outlier hits.

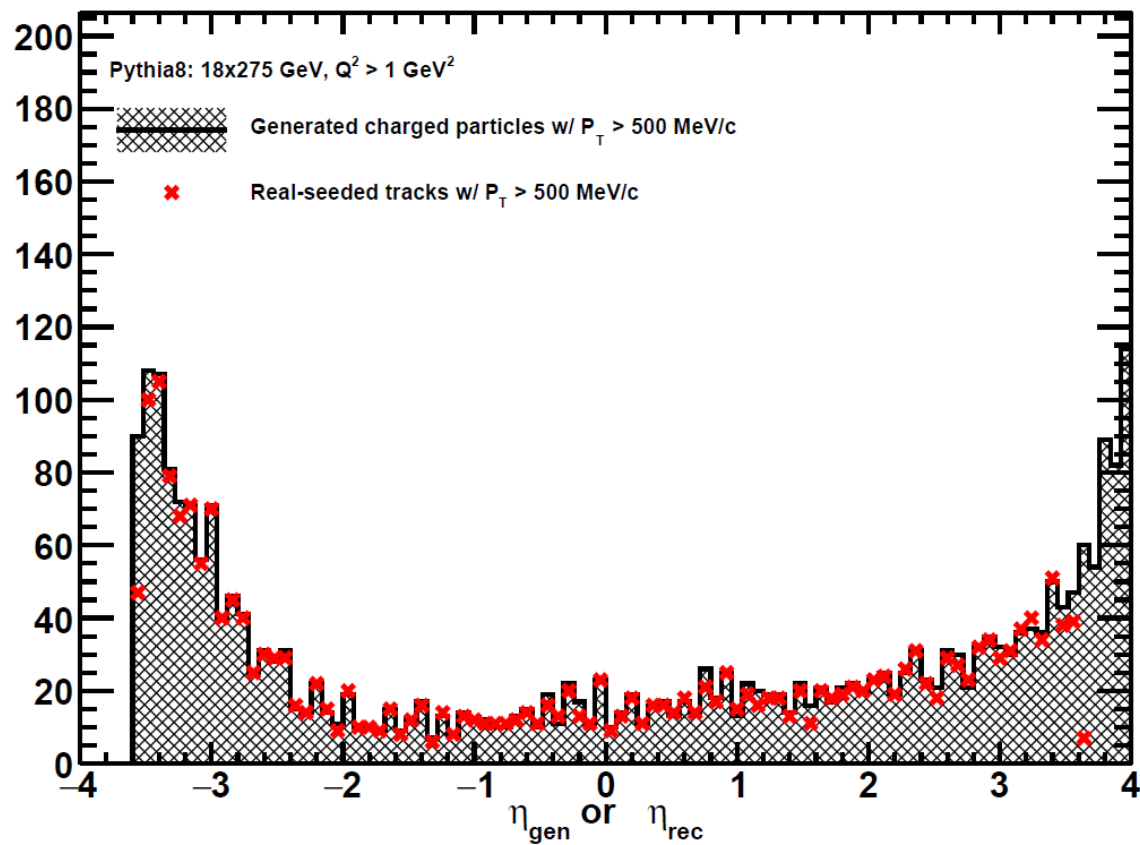
Single-particle tracking benchmark



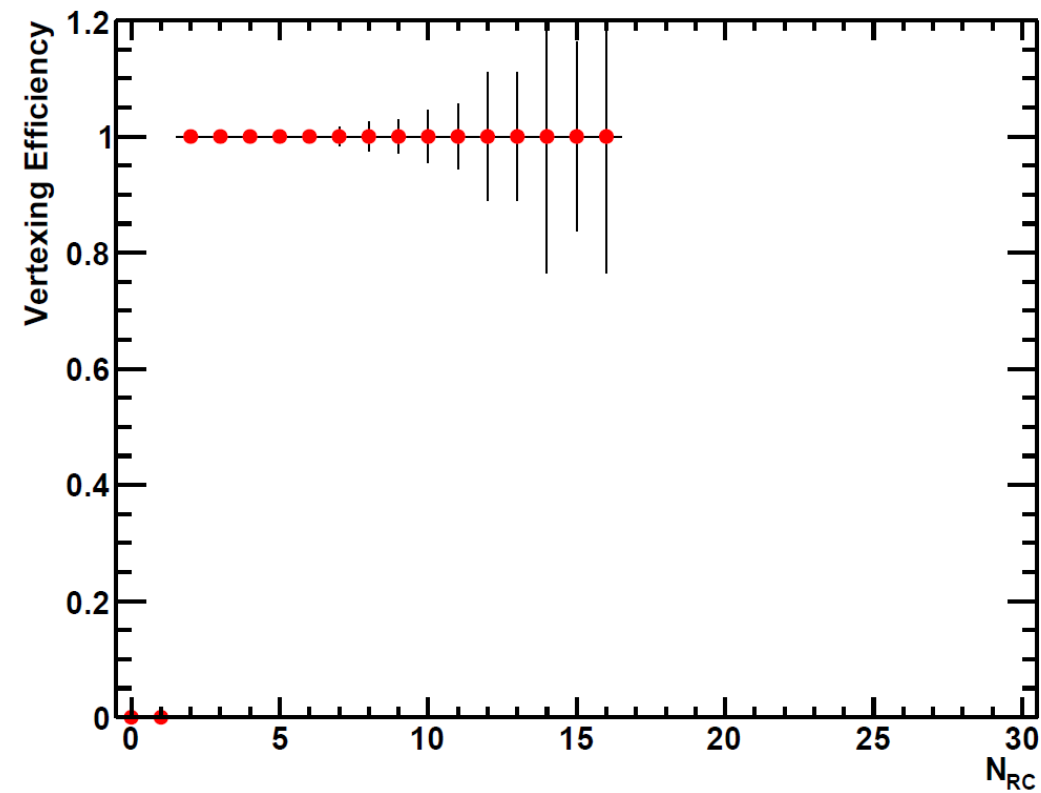
DIS benchmarks

- Benchmark that shows tracking and primary vertexing performance for DIS events.
- The benchmark only runs on local simulations.
- Future updates include allowing the benchmark to run on the campaign output, adding additional efficiency results, and expansion to other beam energy / Q^2 settings.

DIS benchmarks



Vertexing Efficiency vs RC Tracks



Accessing benchmark results

Access here: https://eicweb.phy.anl.gov/ElC/benchmarks/detector_benchmarks/-/pipelines

✓	bench:nhcal_basic_distribution_analysis	5
✓	bench:nhcal_basic_distribution_analysis_f...	5
✓	bench:tracking_performance	
✓	bench:tracking_performance_campaigns	
✓	bench:tracking_performances_dis	
✓	bench:zdc_benchmark	2

Snippets repository

1. [DISAnalysis](#): Expanded version of analysis that is in the DIS tracking benchmark
2. [TrackHitContributions](#): PODIO-based analysis code for studying tracker measurement, outlier, and missing hits.
3. [ImpactPointEstimator](#): Code using Acts libraries to project reconstructed track to 3D DCA with respect arbitrary point.
4. [material_map](#): Local version of material map scripts. Official version located in epic repository.