

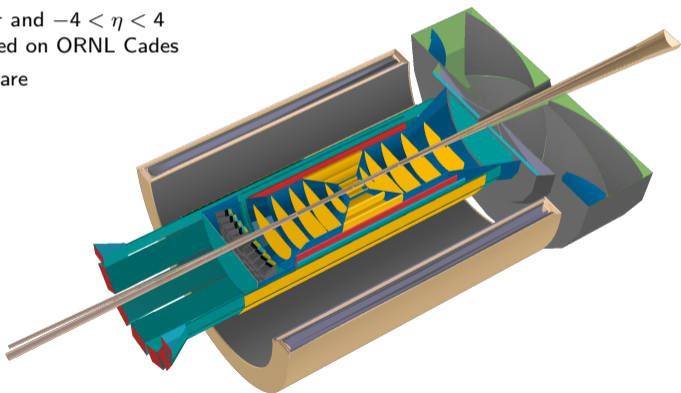
EPIC detector performance studies - DD4hep and eicrecon -

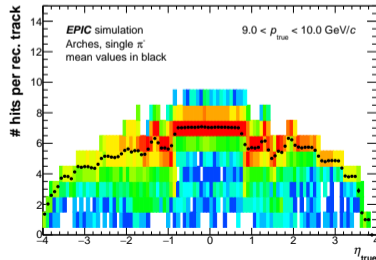
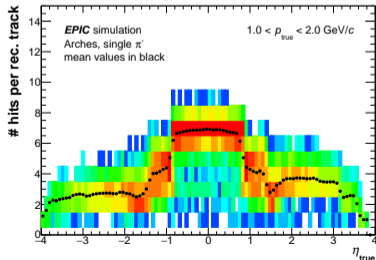
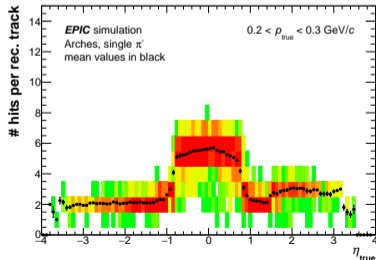
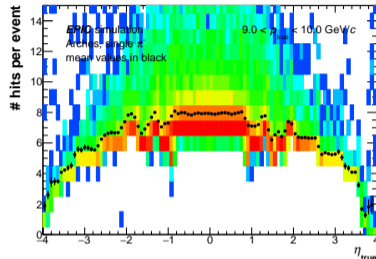
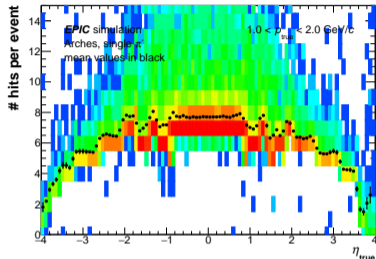
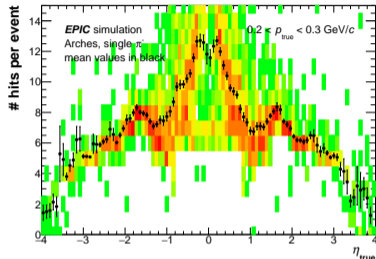
**EPIC Tracking Meeting
January 19, 2023**

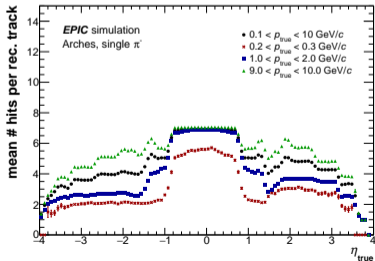
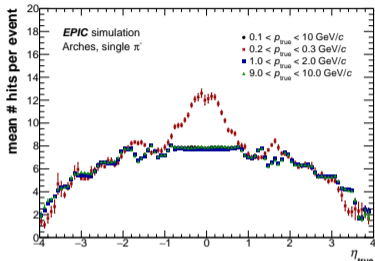
Nicolas Schmidt



- Arches with only tracking systems
→ caveat: backwards TTL layer included for these studies
- Single particle simulations:
→ flat in $0.1 < p < 10$ GeV, $0 < \varphi < 2\pi$ and $-4 < \eta < 4$
→ 4M events per detector setup generated on ORNL Cades
- Reconstruction with latest eicrecon software
→ truth seeded ACTS tracking







Information shown in plots:

- Hits per event:
→ all hits saved for
"SiBarrelHits", "MPGDBarrelHits",
"VertexBarrelHits",
"TrackerEndcapHits",
"TOFEndcapHits", "TOFBarrelHits",
"MPGDDIRHits"
- Hits per track:

```
auto acts results = event->GetHit4Recom::TrackingResultTrajectory("CentralCKTrajectories");
for (const auto& traj : acts.results) {
    const auto (n) = traj->MultiTrajectory();
    const auto (trackTips) = traj->tips();

    const auto (trackTip) = trackTips.front();
    auto trajState = Acts::MultiTrajectoryHelpers::trajectoryState(nj, trackTip);
    if (traj->hasTrackParameters(trackTip)) {
        int n_nMeasurements = trajState.nMeasurements;
    }
}
```

