

- ▶ Single pion $p = 1\text{ GeV}$, $\phi = 0\text{ rad}$, $\theta = 0.157\text{ rad}$ ($\eta = 2.5$)
 - ✦ q/p systematically higher, θ systematically higher, ϕ systematically lower

```
acts_seeding_init  DEBUG /global/project/projectdirs/m3763/wenqing/eic/juggler/JugTrack
/src/components/TrackParamACTSSeeding.cpp:435: iseed = 0, 4, 107.021, -18.8706, 249.865
acts_seeding_init  DEBUG Seed components (sp index) for seed 0 is 1432689727, 3, 5
acts_seeding_init  DEBUG Estimation of track parameters for seed 0 is with q/p 2.10718
phi -0.221514 theta 0.337566 and charge 1
```

- ▶ Single pion $p = 1\text{ GeV}$, $\phi = 0\text{ rad}$, $\theta = 0.157\text{ rad}$ ($\eta = 2.5$)
 - ◆ q/p systematically higher, θ systematically higher, ϕ systematically lower
 - ◆ Invalid index of measurement forming the seed

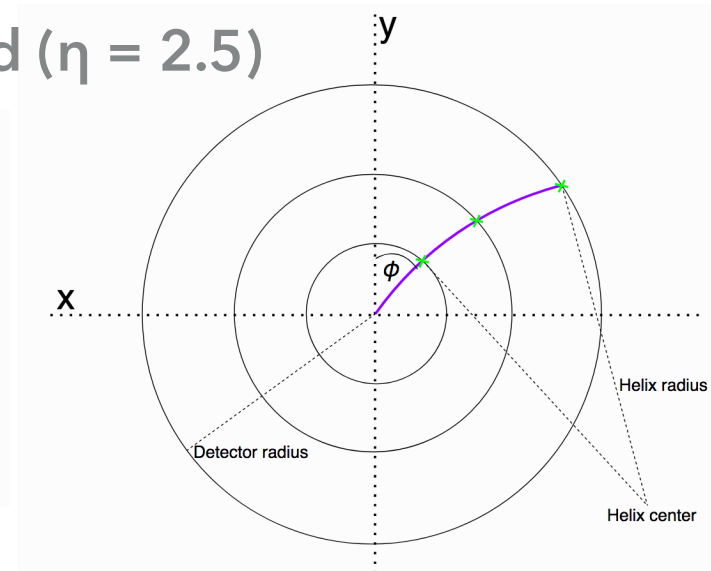
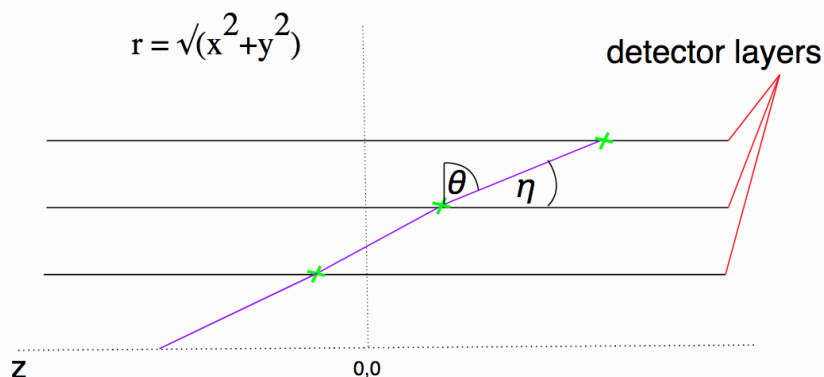
Invalid index of input space points!!!

```
acts_seeding_init  DEBUG /global/project/projectdirs/m3763/wenqing/eic/juggler/JugTrack
/src/components/TrackParamACTSSeeding.cpp:435: iseed = 0, 4, 107.021, -18.8706, 249.865
acts_seeding_init  DEBUG Seed components (sp index) for seed 0 is 1432689727, 3, 5
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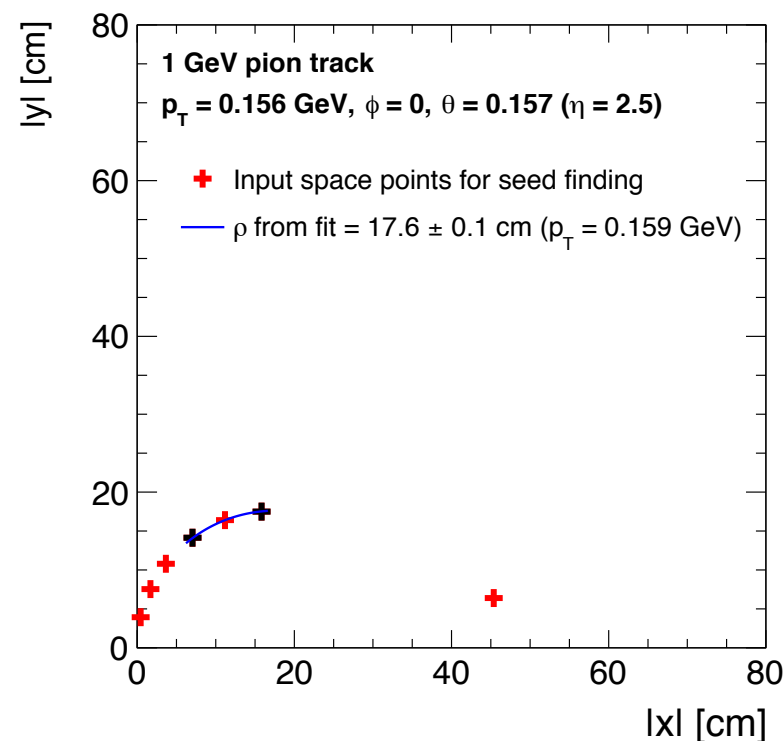
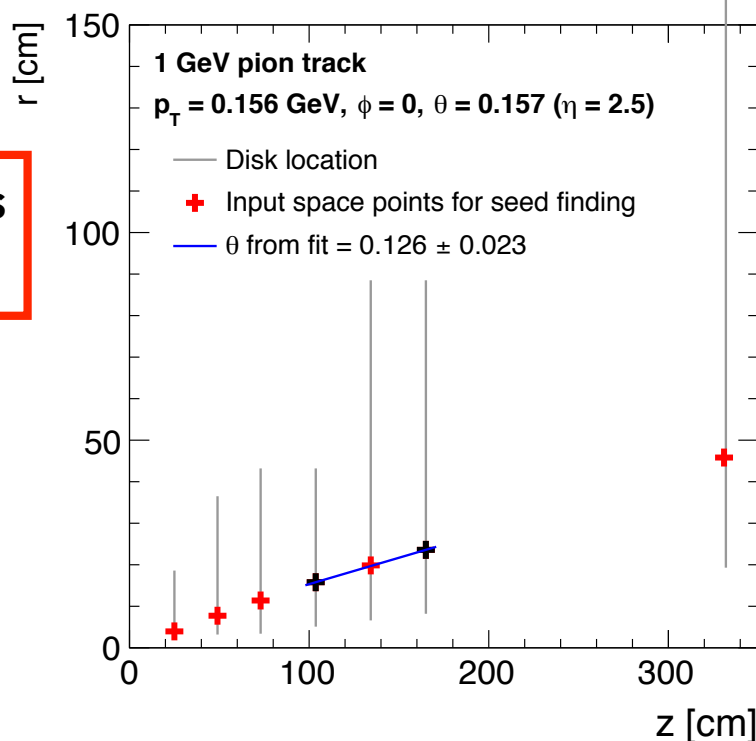
- Single pion $p = 1\text{ GeV}$, $\phi = 0\text{ rad}$, $\theta = 0.157\text{ rad}$ ($\eta = 2.5$)

Simple model to
reconstruct θ

Assume
homogeneous
magnetic field



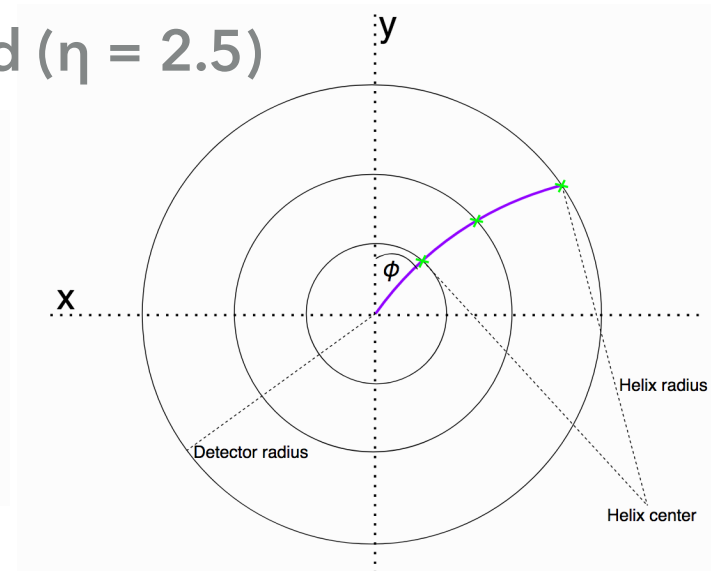
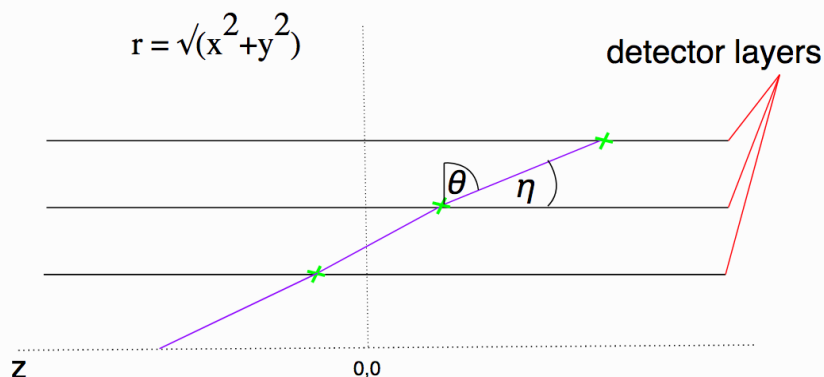
Input points looks
reasonable



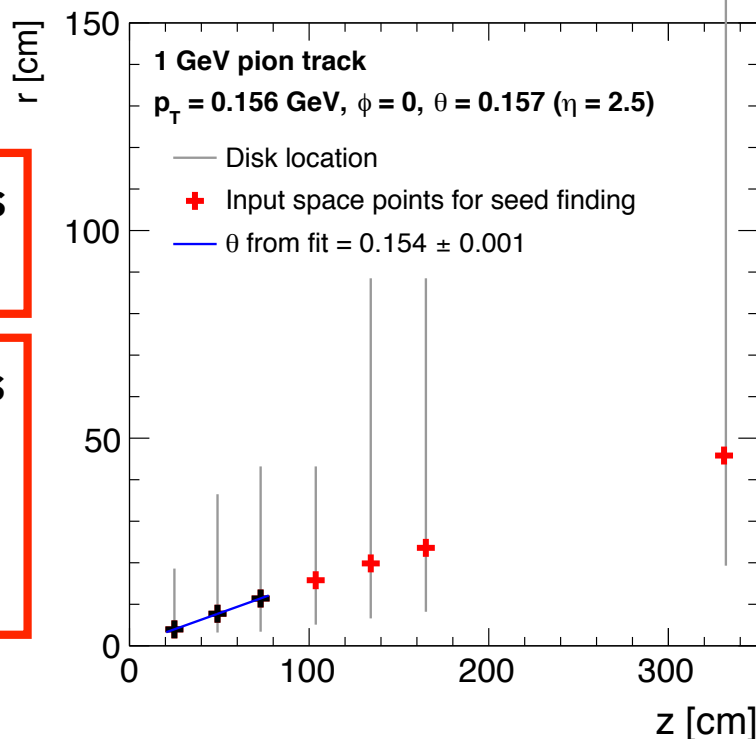
- Single pion $p = 1\text{ GeV}$, $\phi = 0\text{ rad}$, $\theta = 0.157\text{ rad}$ ($\eta = 2.5$)

Simple model to reconstruct θ

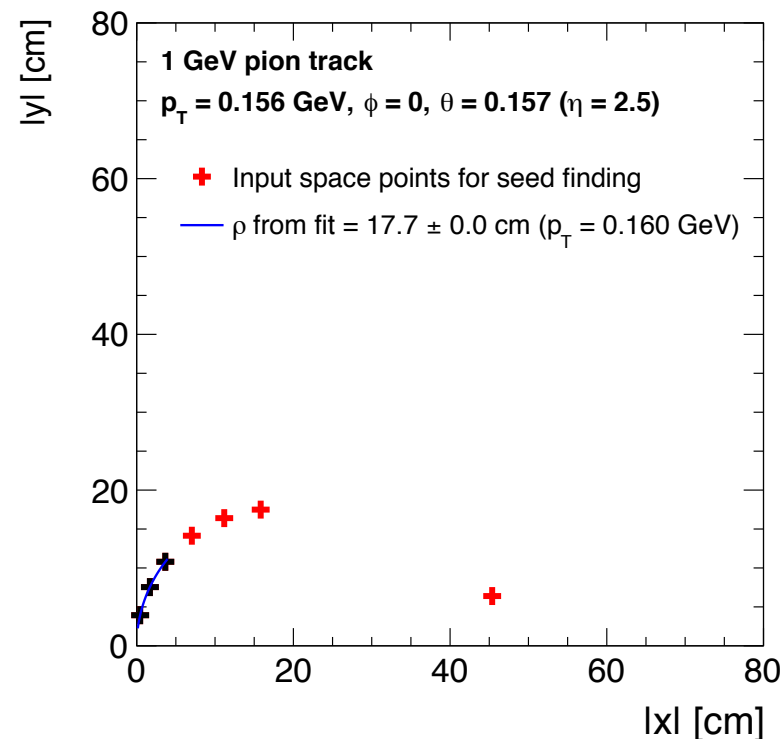
Assume homogeneous magnetic field



Input points looks reasonable



Triplet with points with homogeneous magnetic field preferred



- ▶ For the issue with invalid index of input point inside a seed
 - ◆ ACTS seeding expert will help: need to share the code and eic running environment
 - ◆ Check if the same issue for higher p tracks (e.g. 2 GeV)
- ▶ Fine-tuning the configure-table for seeding
 - ◆ rMax, zMin, zMax: detector bounds seen by the seeding algorithm (it's better to have the track exiting the volume hence for low p tracks a smaller volume might work better)
 - ◆ radLengthPerSeed: radiation length for multiple scattering (M.S.) calculation
 - ◆ sigmaScattering: scattering allowed in unit of standard M.S.
 - ◆ Constrain the triplet to be in a homogenous B field (drop the forward GEM hit ~3m)