Trk Eff. @ low p_T

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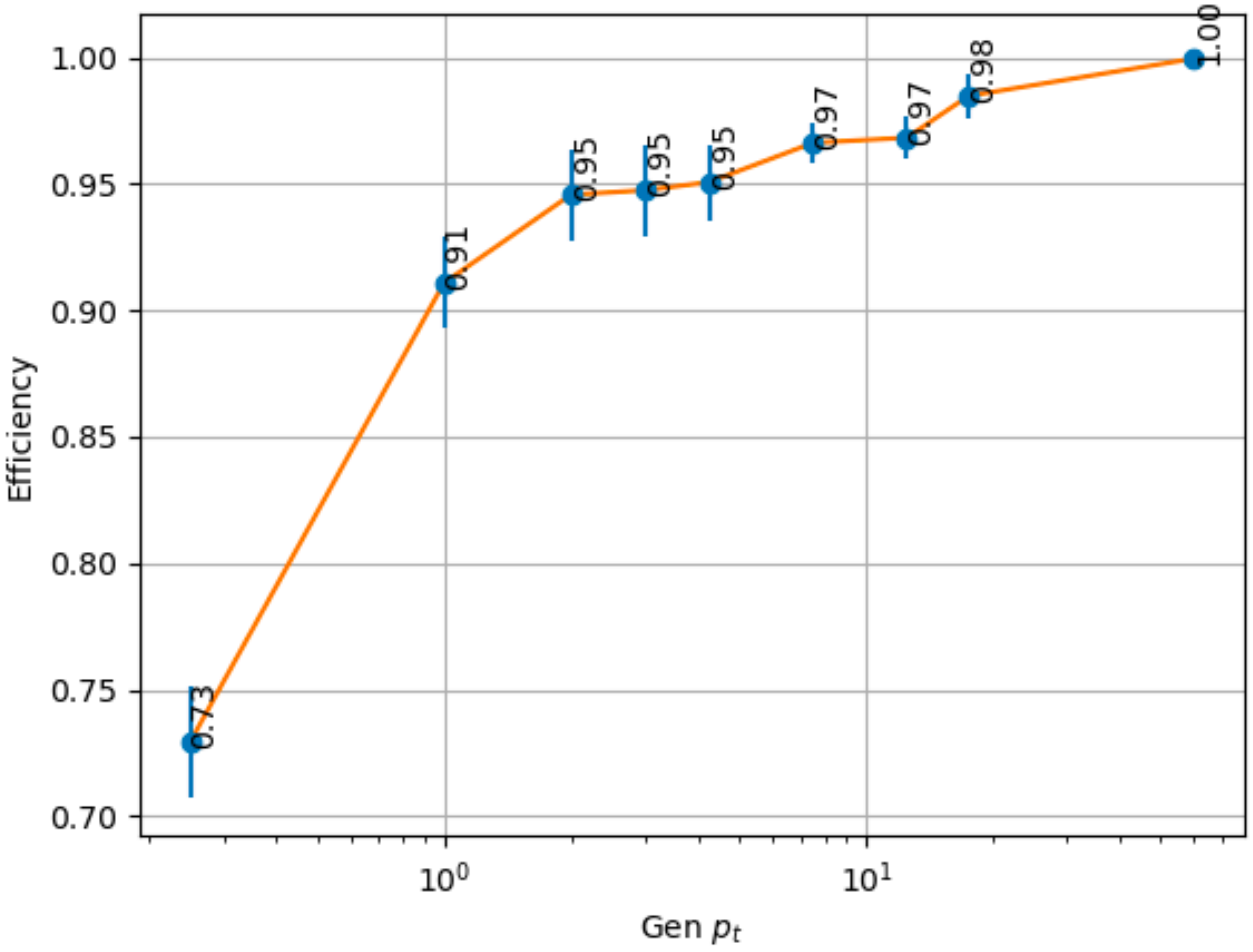
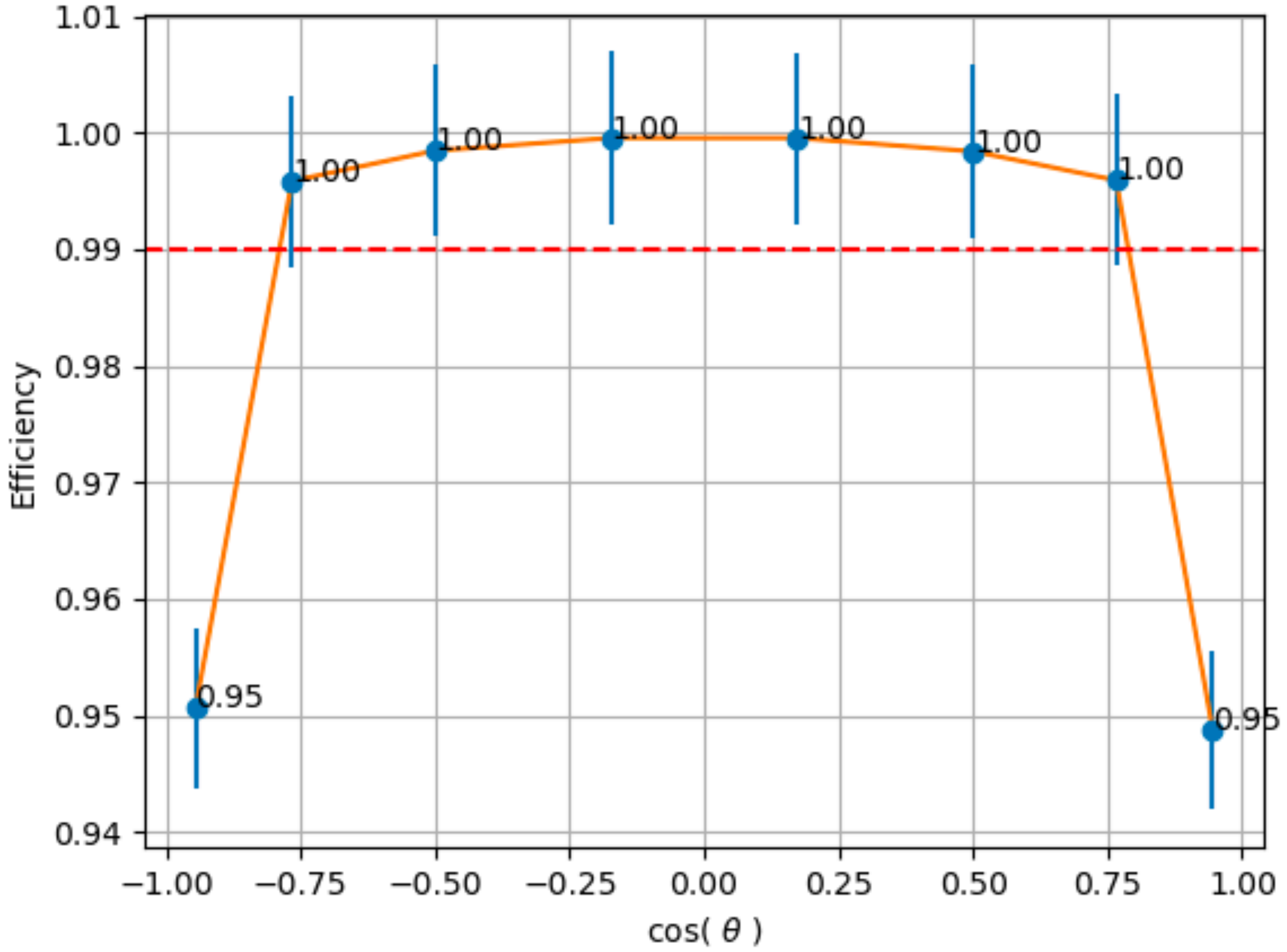
Trk. Eff. vs. p_T and $\cos(\theta)$

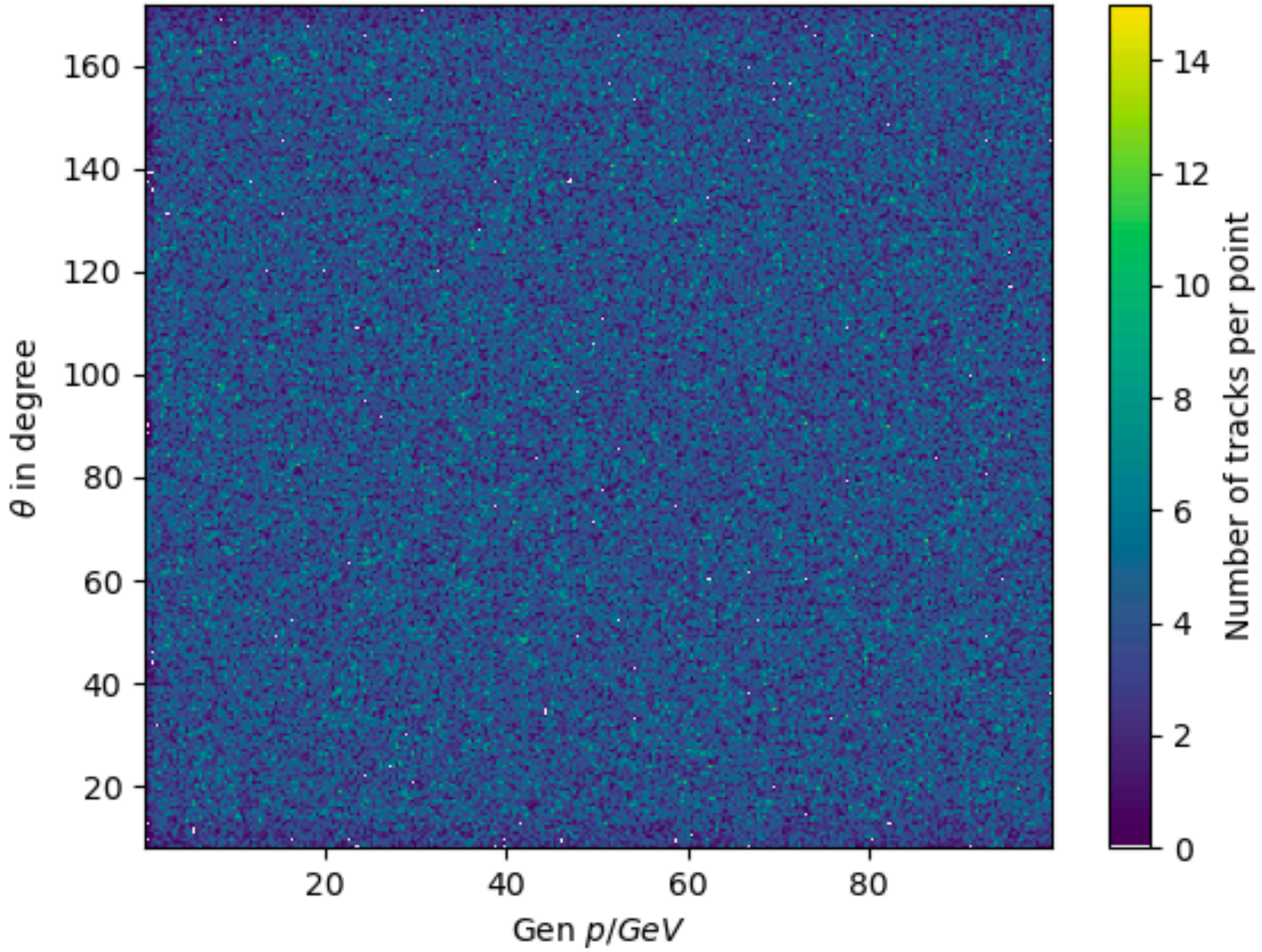
Single muons, 0.1-100 GeV, $\theta = 8$-172°

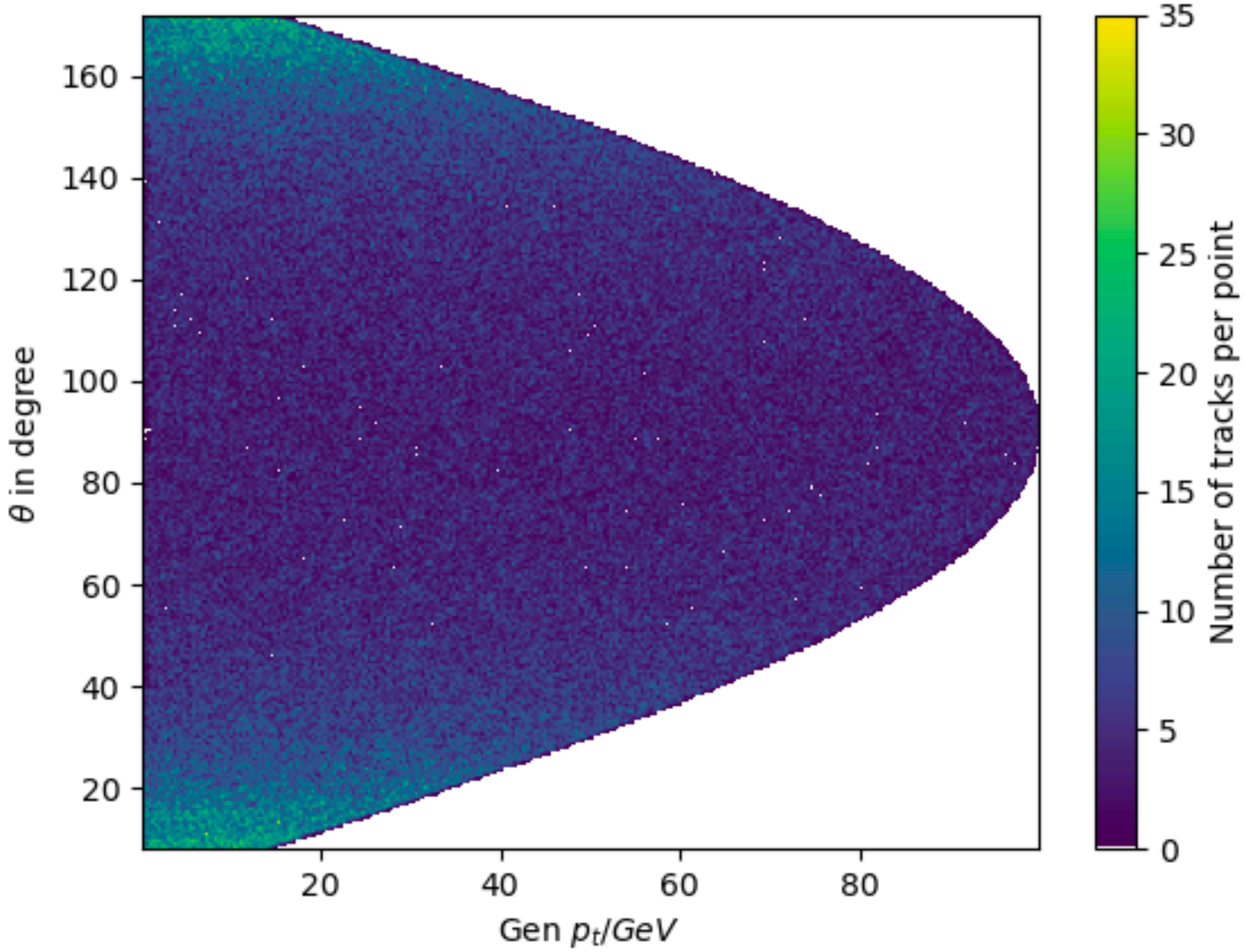




Particle gun with θ, momenta

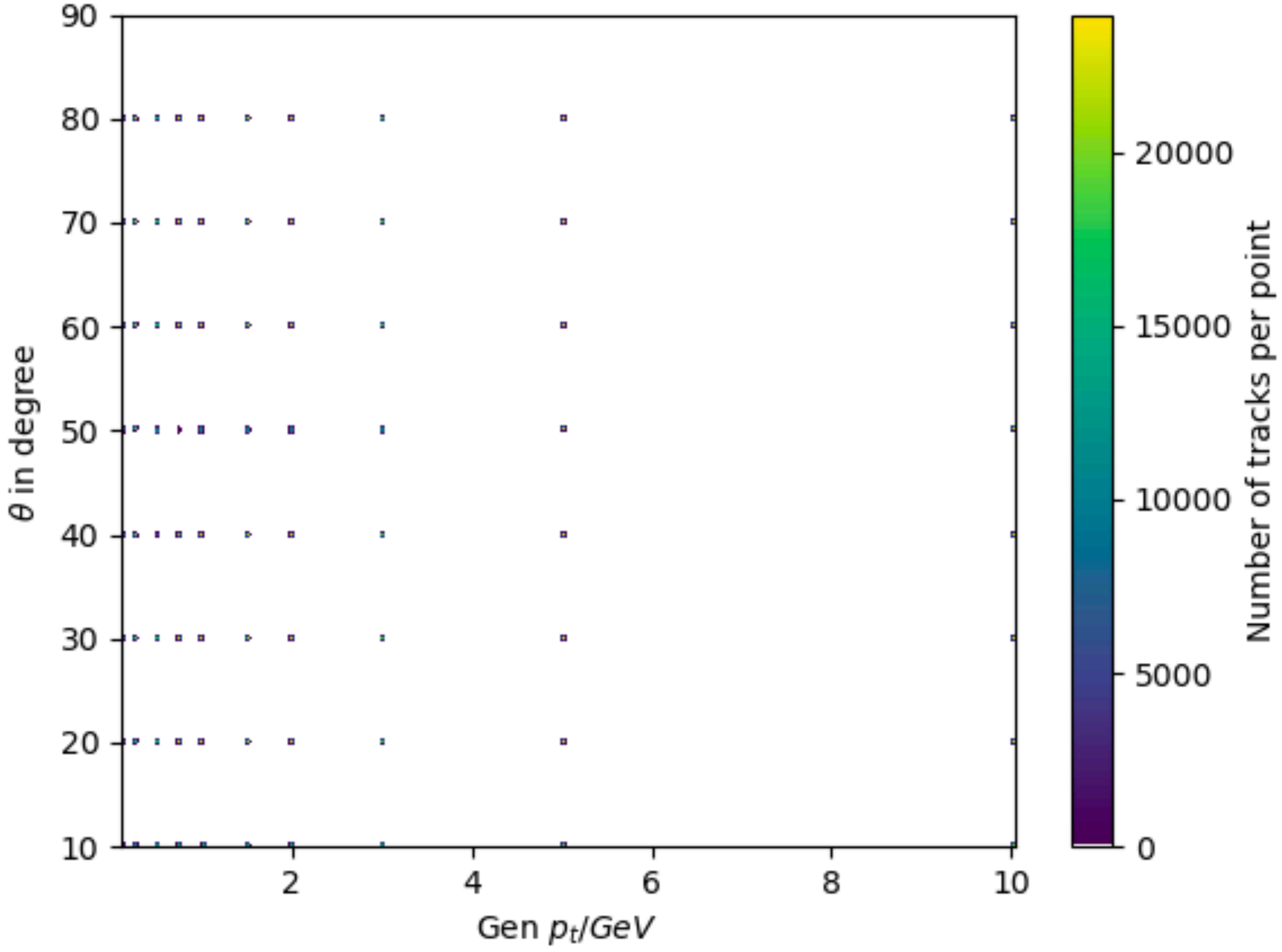
$$\theta, \mathrm{p} \;\rightarrow\; \theta, \mathrm{p_T}$$



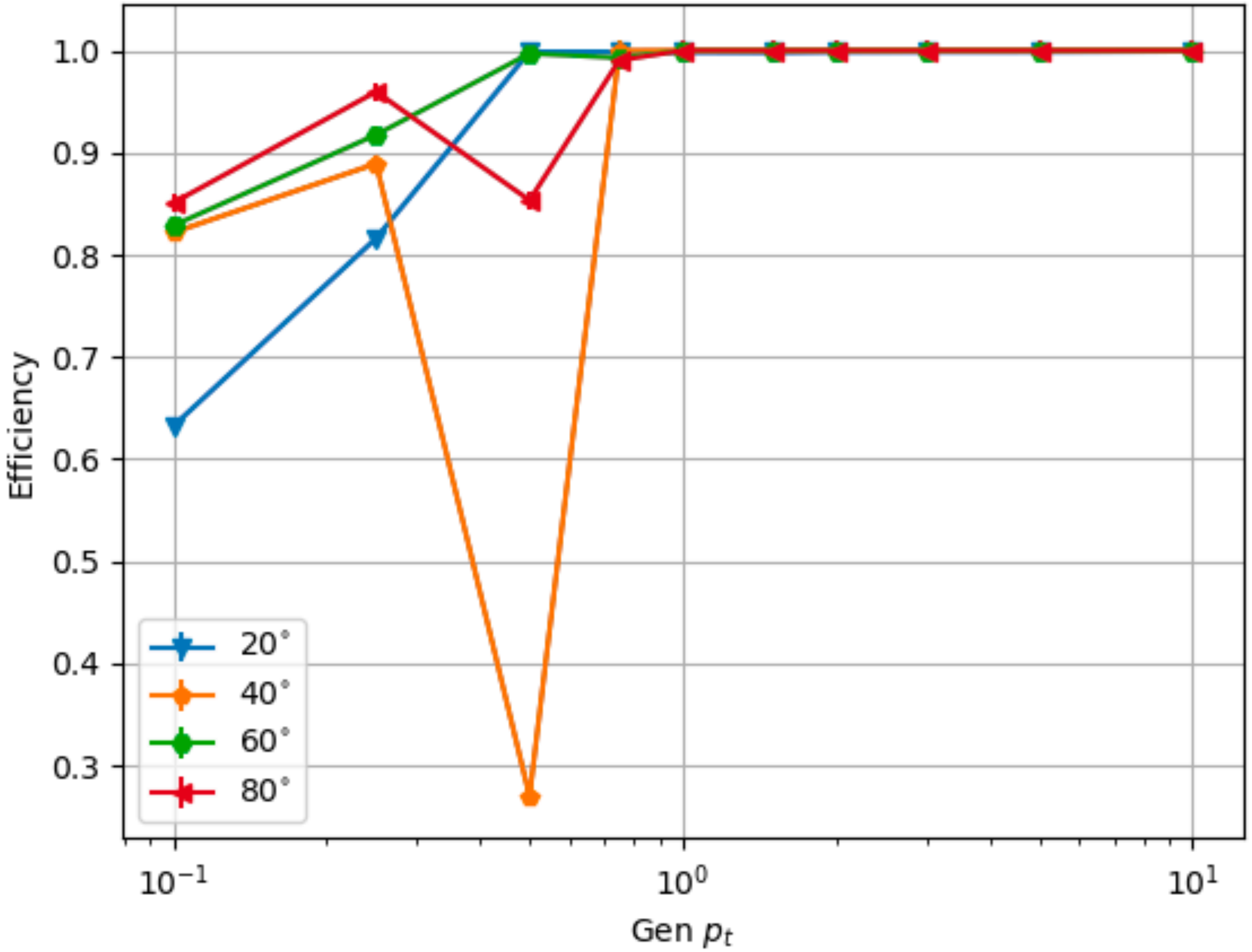


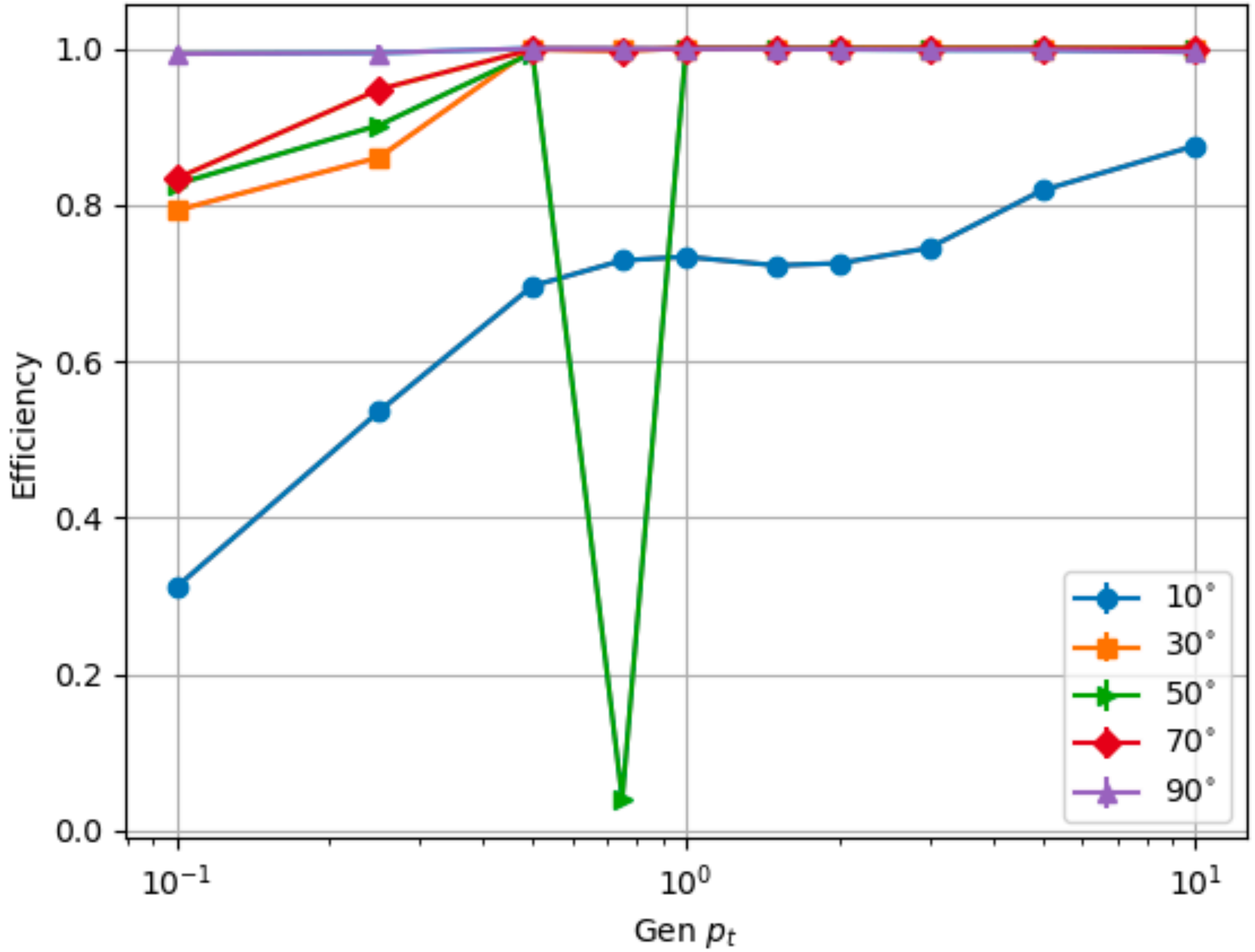
Particle gun in θ, momenta

To avoid possible bias,



Trk. Eff. vs. p_T and $\cos(\theta)$



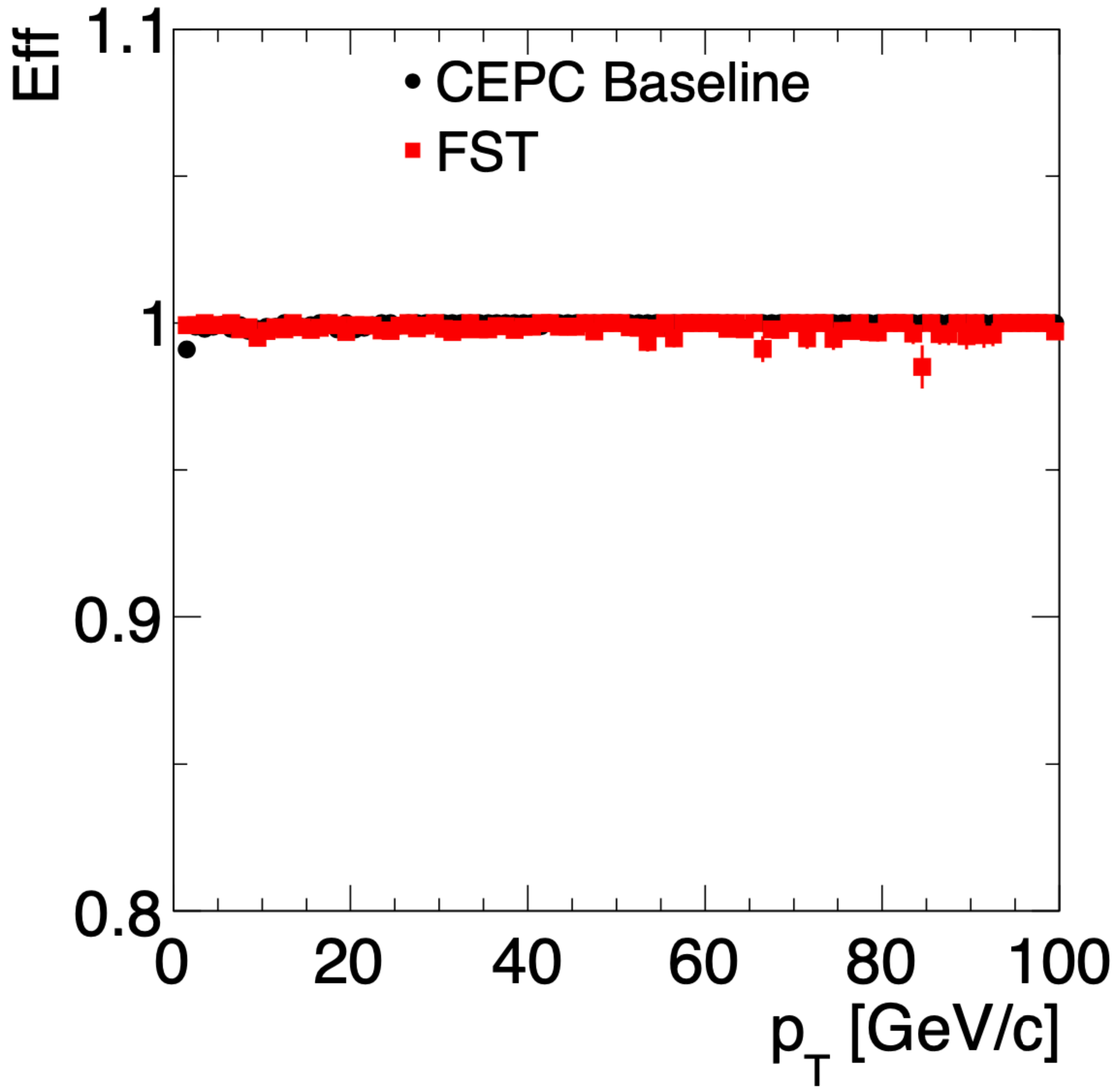


Trk. Eff. vs. CDR Reference

Single muon particles: Figure 4.27 shows the tracking efficiency of the FST for single muons as a function of p_T. The efficiency is close to 100% at $p_T > 1$ GeV. The CEPC baseline has a similar performance, suggesting that both trackers are capable of finding tracks efficiently in the detector fiducial region.

The resolutions of track momentum, impact parameters of d_0, and z_0 as functions of track p_T in the barrel and endcap are shown in Figure 4.28. The performance of the FST is again comparable to that of the CEPC baseline. However, the latter has a slightly better momentum resolution at low momentum because it has less material.

Dimuon mass resolution: Figure 4.29 compares the dimuon invariant mass distributions from the $ZH \rightarrow \nu\bar{\nu}\mu^+\mu^-$ events. The FST has a mass resolution of $\sigma = 0.21$ GeV, approximately 16% better than that of the CEPC baseline.



To do

- Need to know a clear target for track eff. at low p_T
- Look in to what is happening around 40-50° at low p_T