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Low Momentum Tracking

CBM-Dileptons PWG Meeting

31 Jan 2024

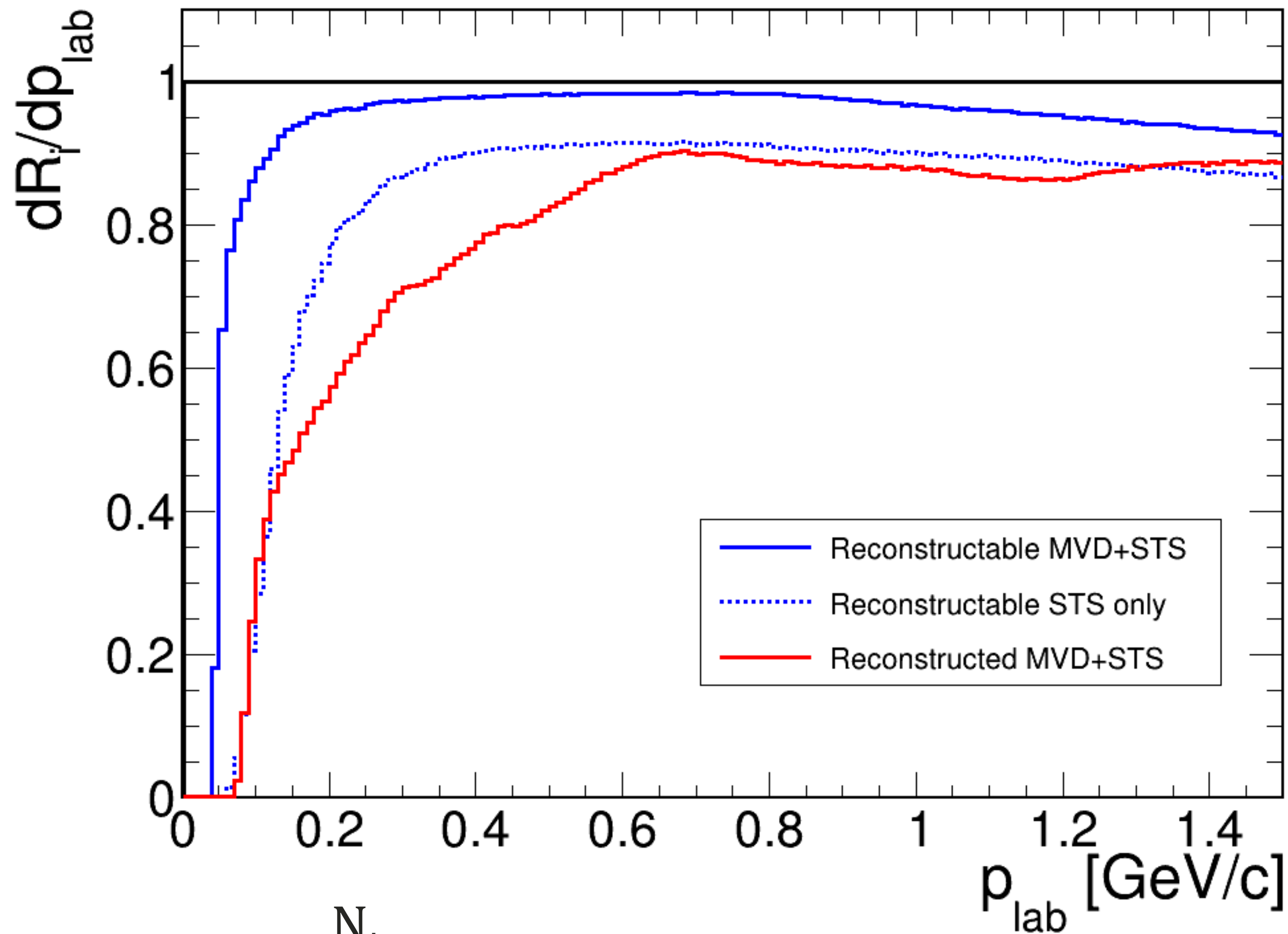


Simulation Setup used

- CbmRoot: apr20_fr_18.2.1_fs_jun19p1
- Geometries: MVD v20d tr, STS v22c, MAG v22a, MF v22c
- Locations: /lustre/cbm/users/fkornas/mc/data/geometries/mvd/v20d_tr/white_pions/
- Particles: π^+ , “white“ distribution, only primaries, $N=10^7$
 $0 \leq p / (\text{GeV}/c) \leq 1.5$
 $0 \leq \phi / ^\circ < 360$
 $0 \leq \theta / ^\circ \leq 30$
- Definition: “reconstructable“ = MC-Particles with ≥ 3 Hits

The data is analyzed using the “Analysis Tree” data format

Comparison of angle-integrated yields

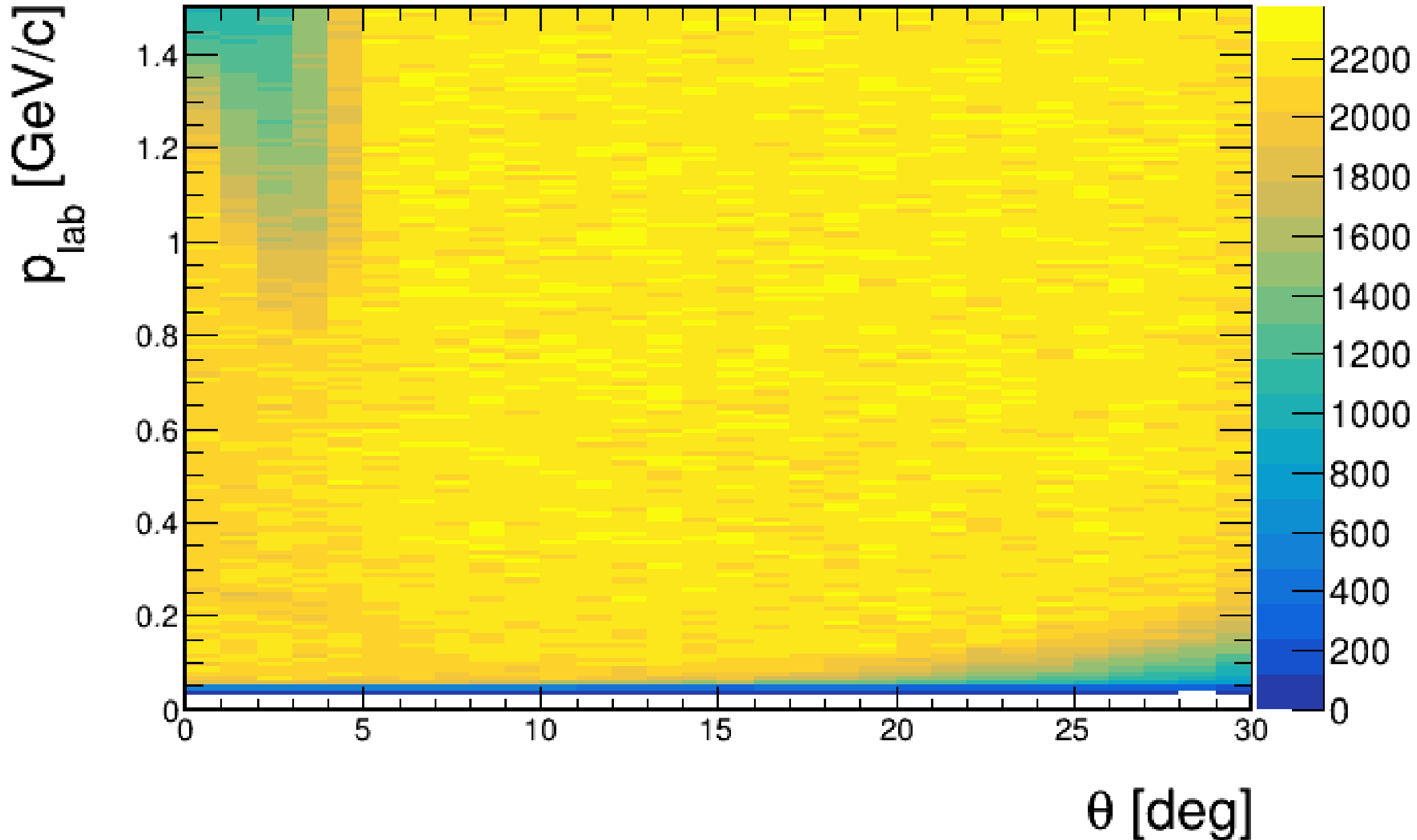


$$R_i := \frac{N_i}{N_{4\pi}}$$

Phase space of p_{lab}

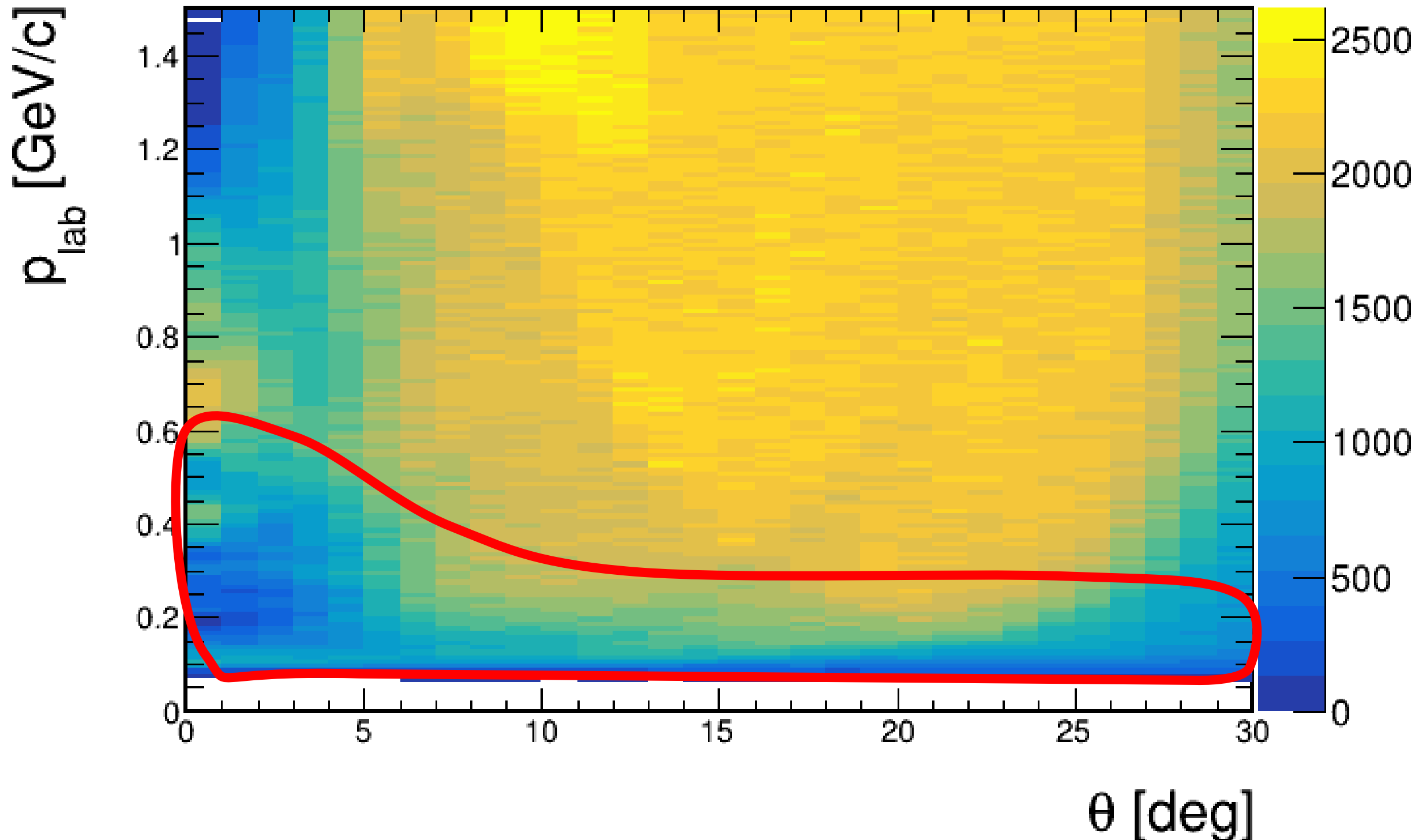
Reconstructable MC-Particles

$$\frac{d^2N}{dp d\theta} \left[\frac{1}{10 \frac{\text{MeV}}{c}} \right]$$



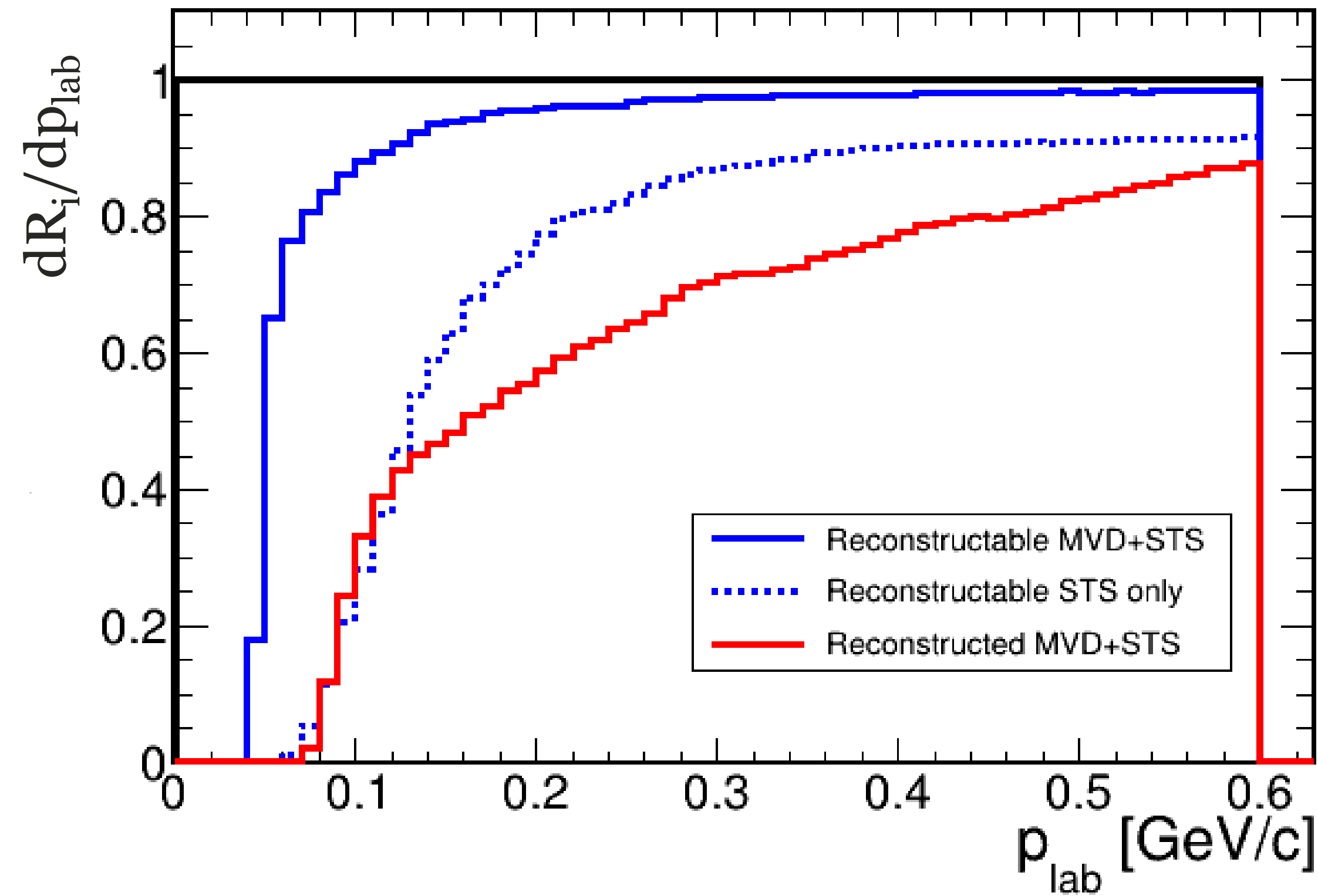
Reconstructed Particles

$$\frac{d^2N}{dp d\theta} \left[\frac{1}{10 \frac{\text{MeV}}{c}} \right]$$

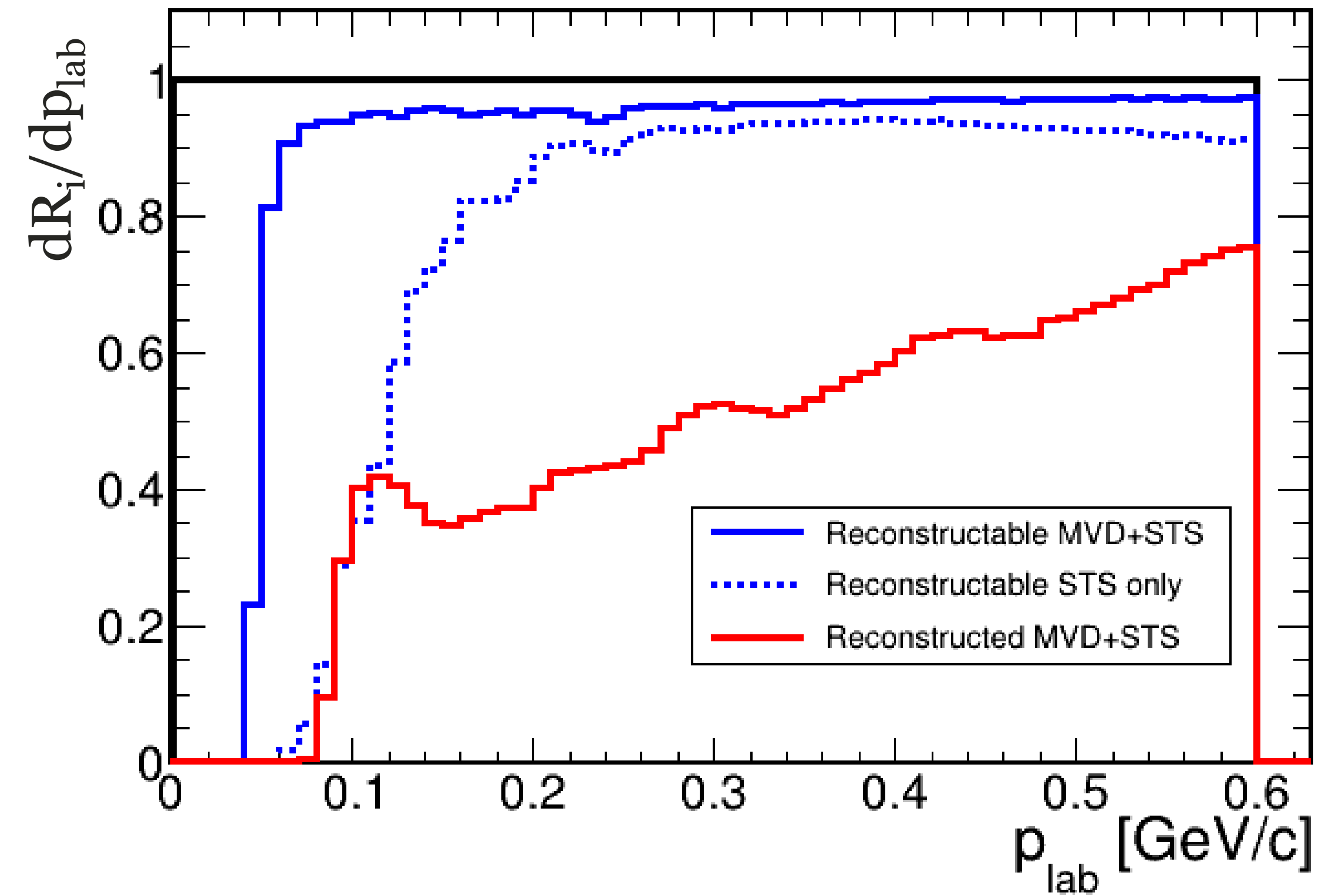


Comparison on differential view

All angles

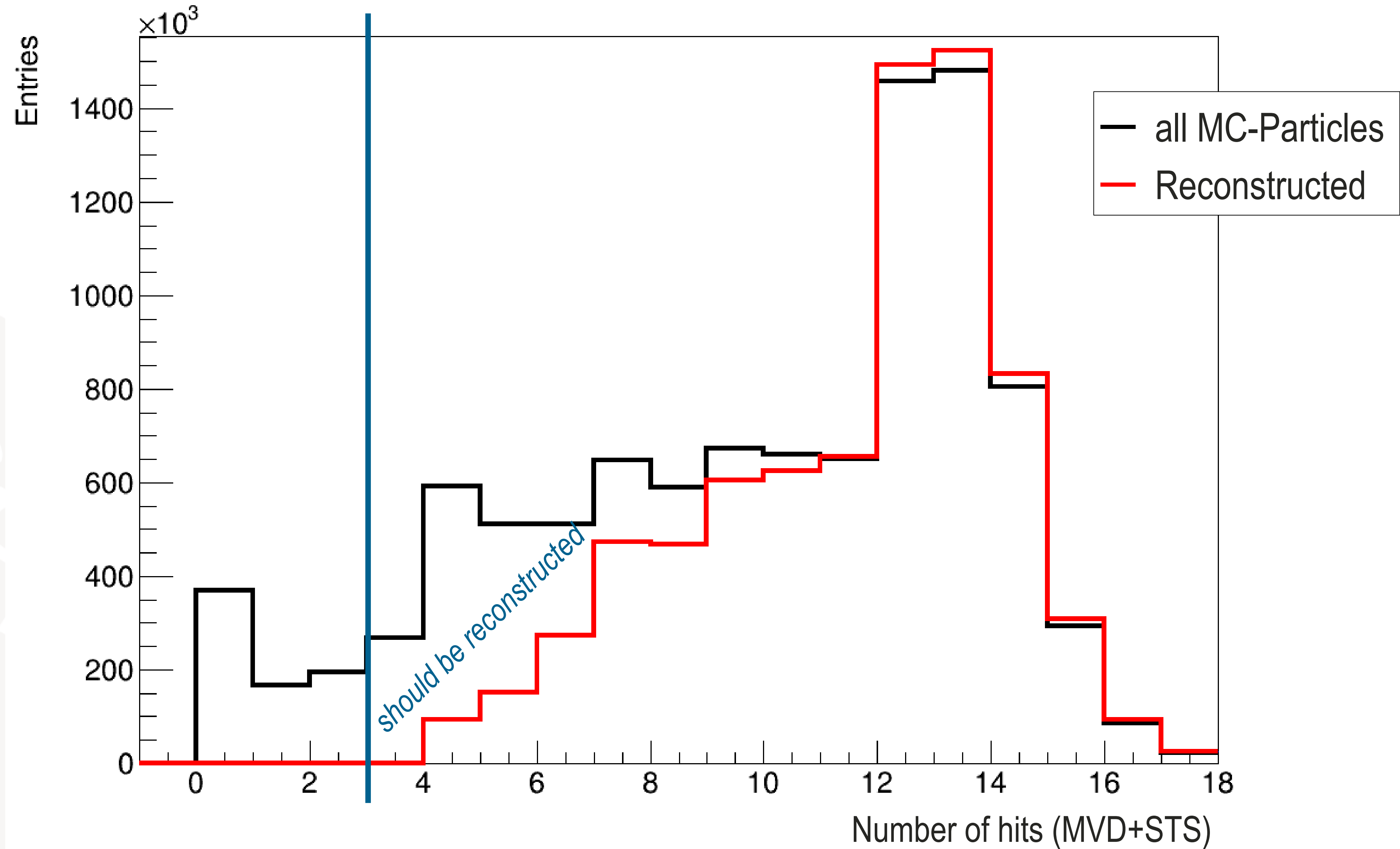


$\theta < 10^\circ, 0 \leq \phi < 360^\circ$

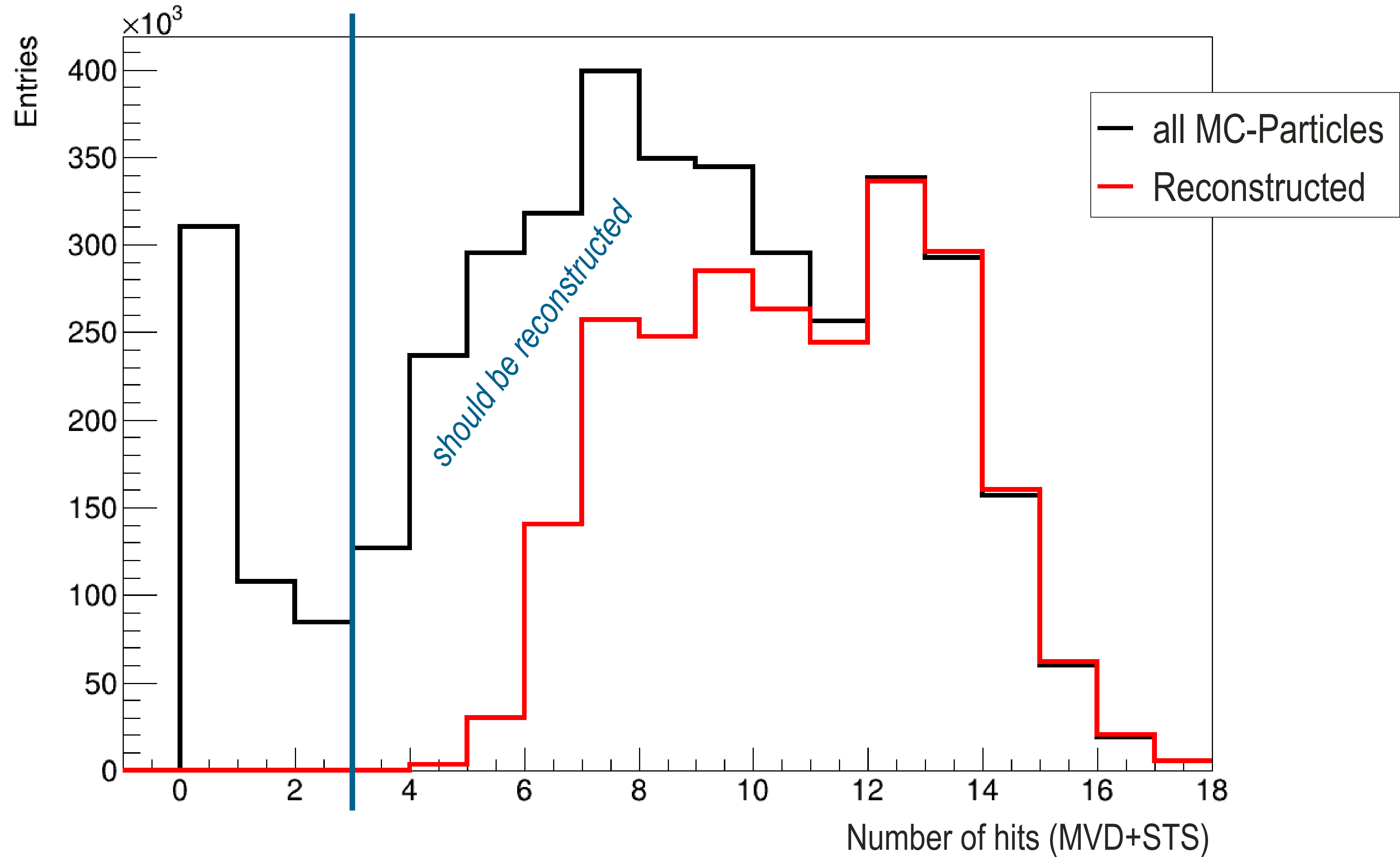


50% of tracks not reconstructed for $p < 350$ GeV/c

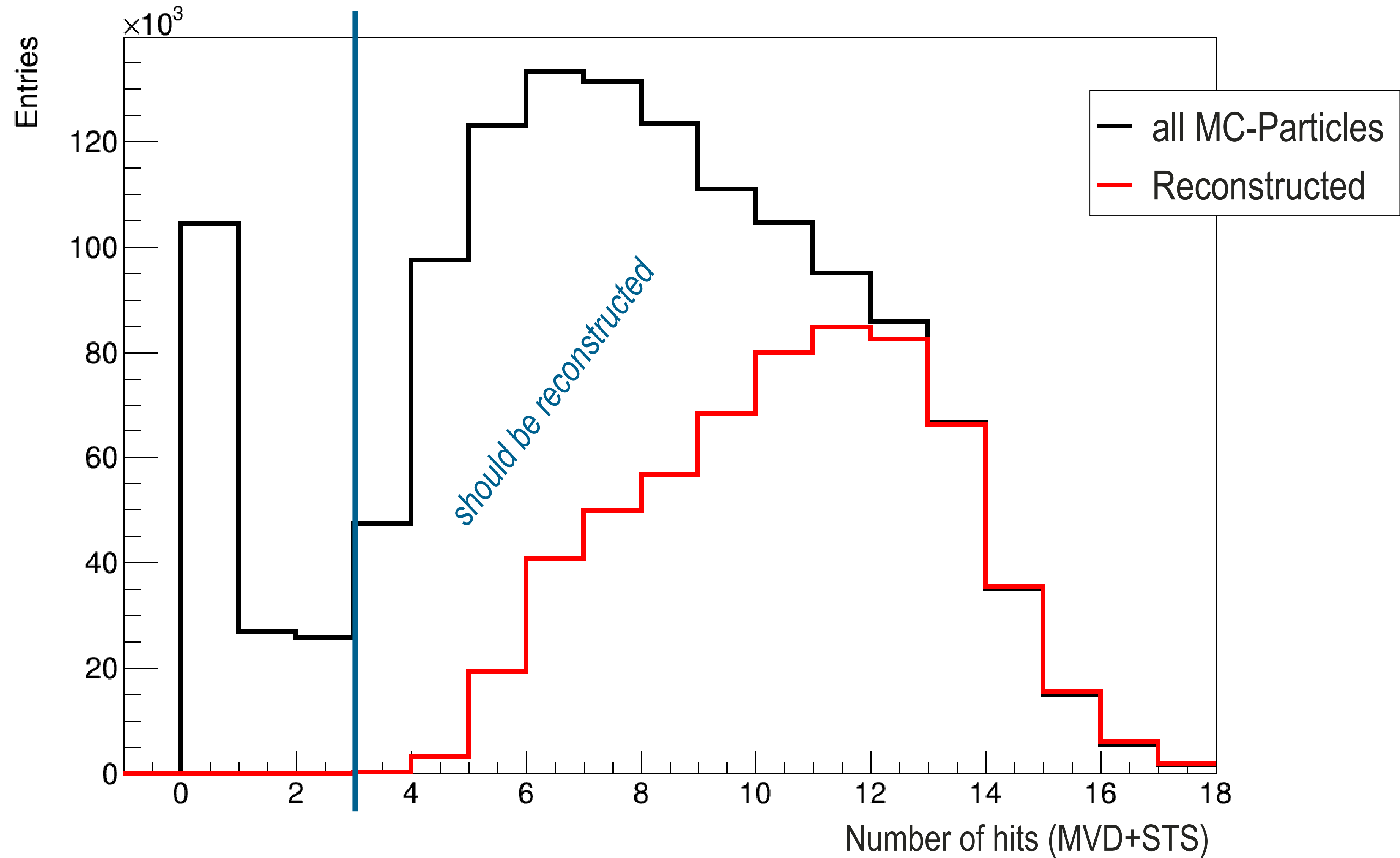
Hit count on stations: all momentums, all angles



Hit Count on Stations: $p < 0.6$ GeV/c, all angles



Hit Count on Stations: $p < 0.6 \text{ GeV}/c$, $\theta < 10^\circ$



Thanks for listening

...and special thanks to Frederic Linz for providing the productions shown.

