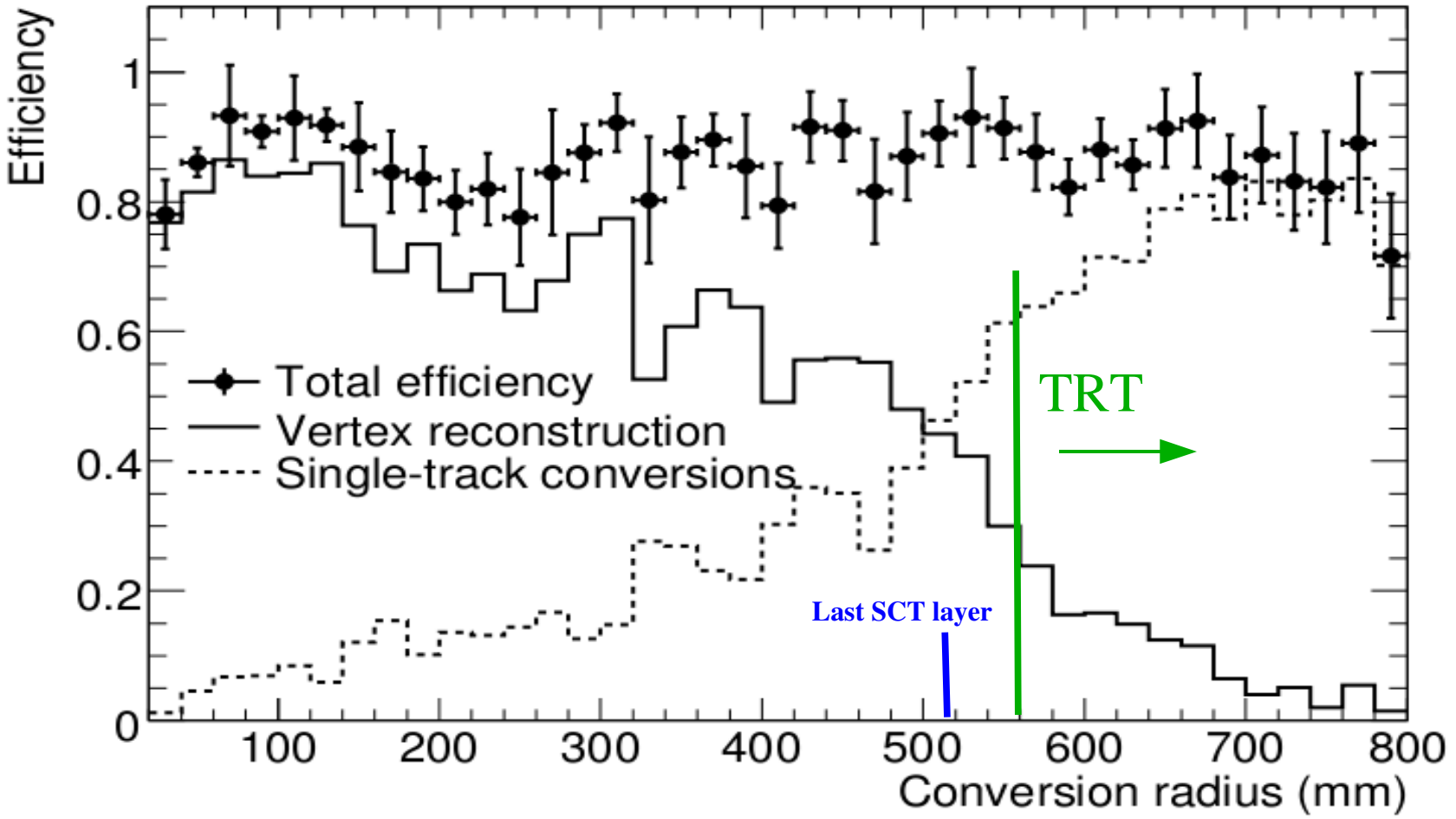
Some ideas about conversions

Reconstruction Efficiency for converted 20 GeV photons



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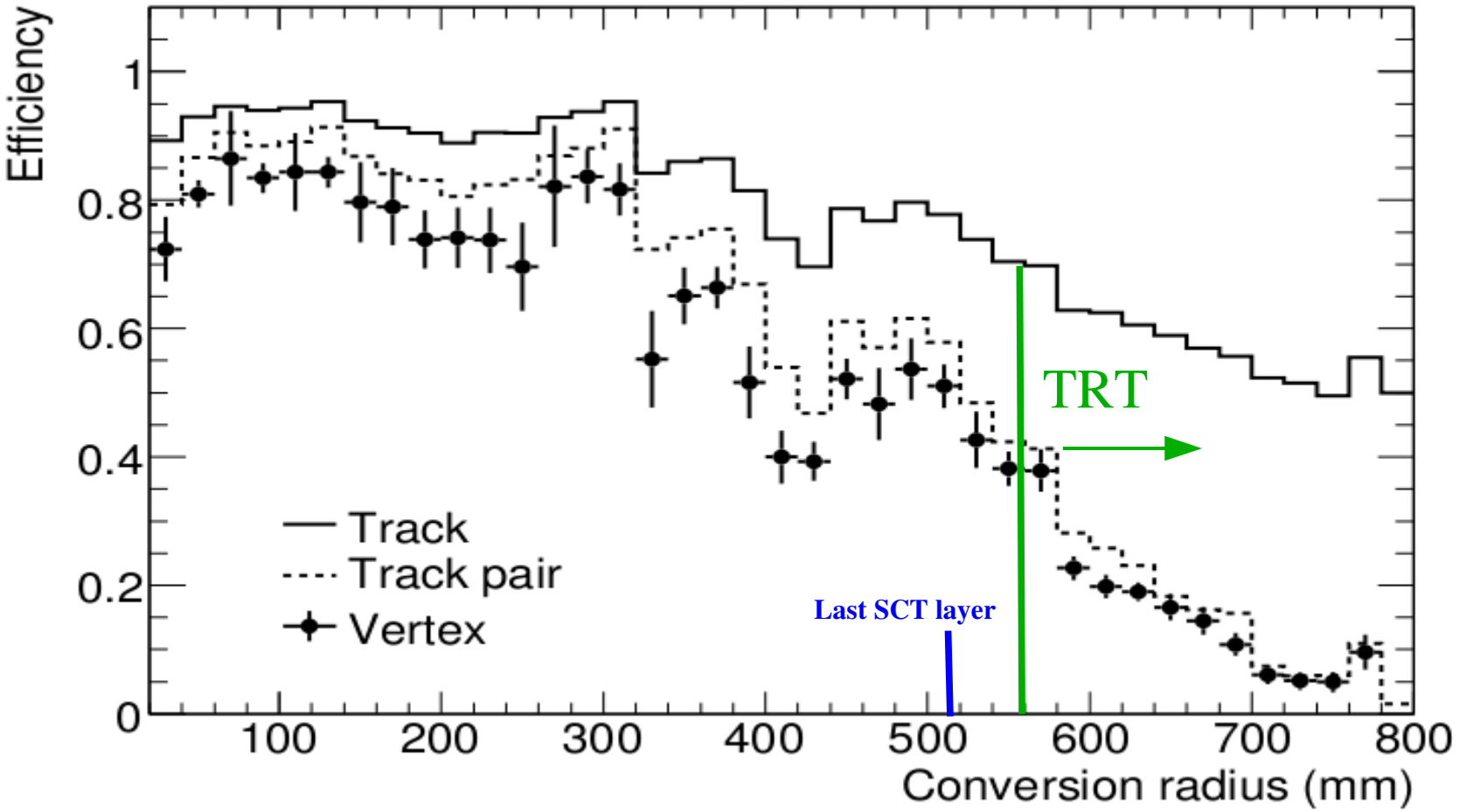
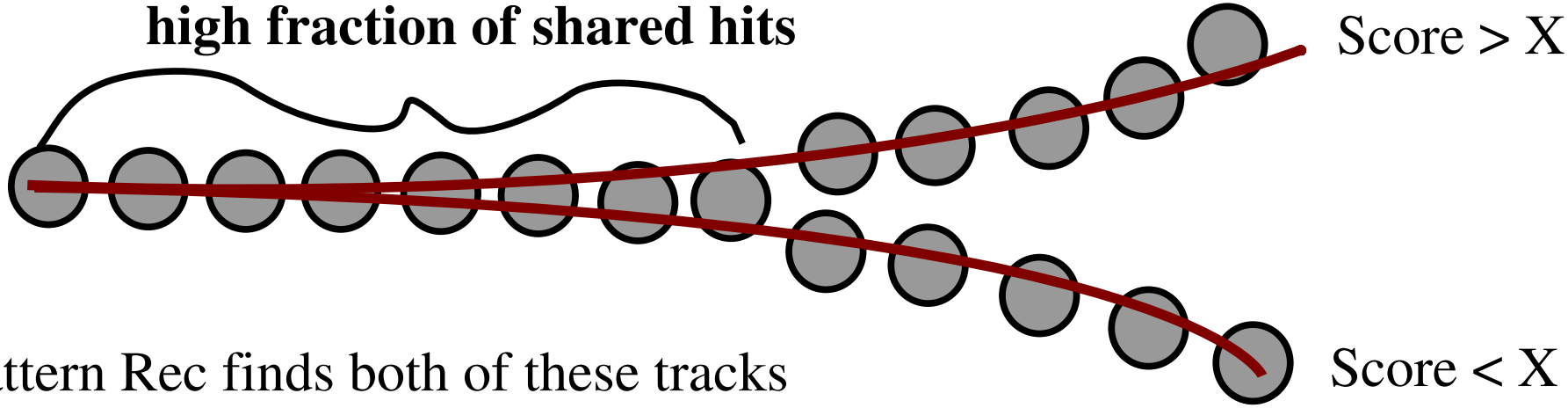


Some ideas about conversions

... in the TRT

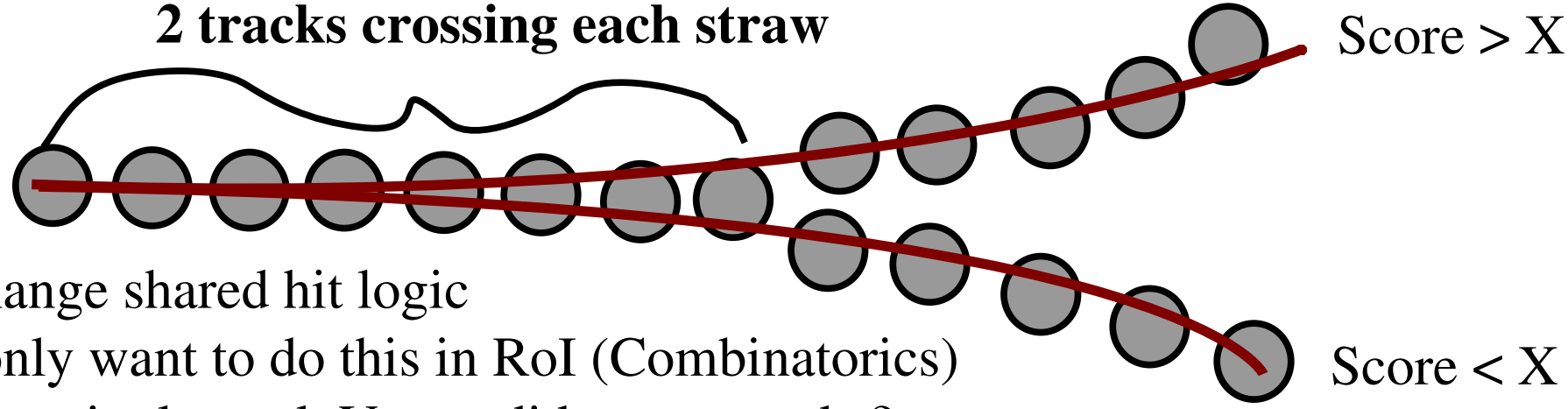


- Pattern Rec finds both of these tracks
  (need for ambi – resolving)
- Late or high pT conversions will naturally share hits in TRT
- Current shared hit logic will assign all shared hits to one track, while removing them from the other
- Single conversions purity potentially worrisome. High fraction electrons which brem after/in Si will have unmatched track segment in TRT. indistinguishable from single conversions (ID pid)
- Late (in TRT) Single track conversions -> double track conversions

Some ideas about conversions

... in the TRT

2 tracks crossing each straw



- Change shared hit logic
  - only want to do this in RoI (Combinatorics)
  - use single track Vx candidates as seeds ?
    - (require hits with long ToT in delta R cone)
- Score on track-pair not track basis
- Exploit shared hits. Modified pid tool (ToT features?, double HL hits?)

However...

starting at the last Si layer back of envelope calculation shows by the end of the TRT the separation is ...

pT 0.5 GeV/c -> separation = 447.5 mm
pT 1.0 GeV/c -> separation = 199.7 mm
pT 2.0 GeV/c -> separation = 97.6 mm
pT 5.0 GeV/c -> separation = 38.8 mm
pT 10.0 GeV/c -> separation = 19.4 mm
pT 20.0 GeV/c -> separation = 9.7 mm
pT 30.0 GeV/c -> separation = 6.5 mm

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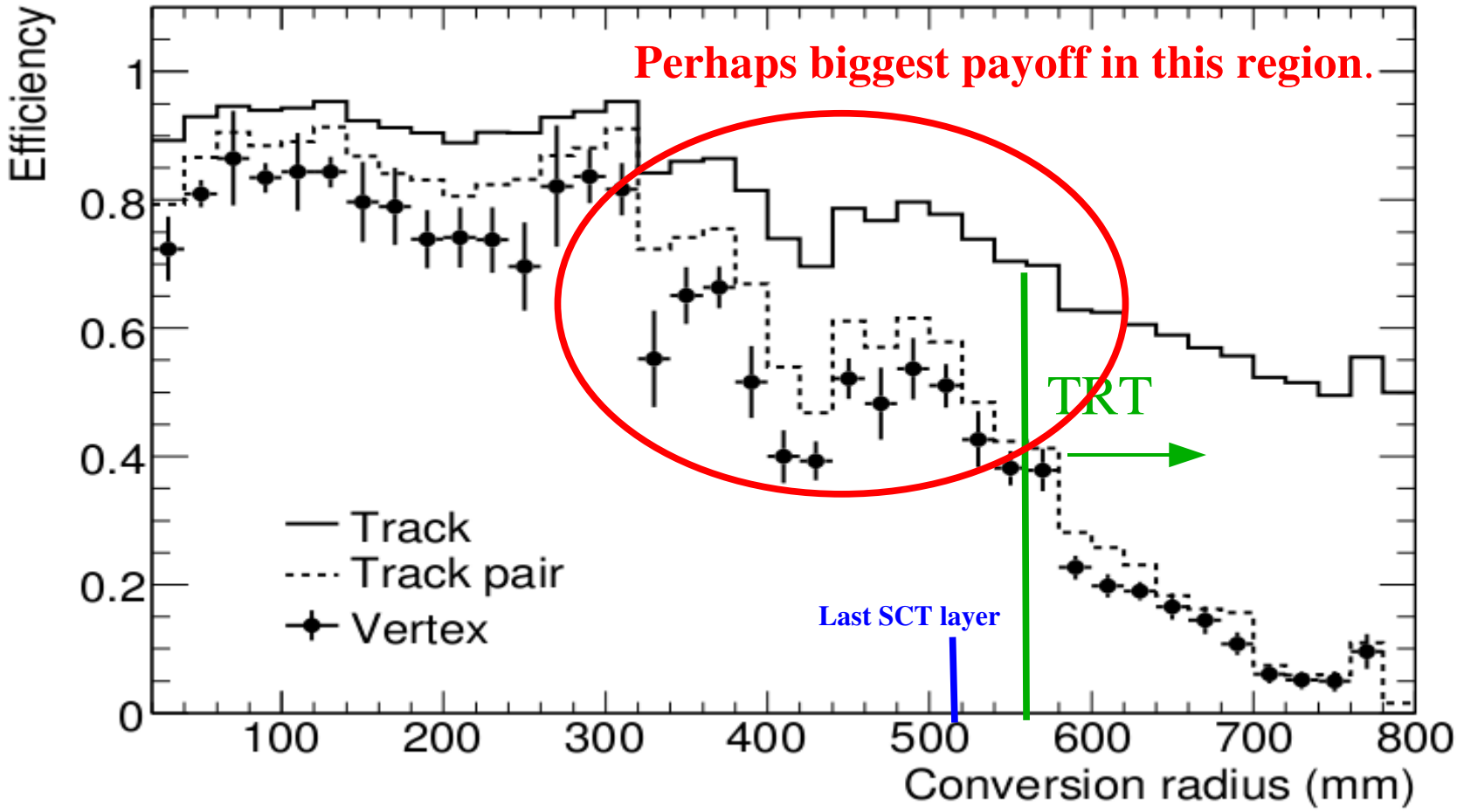

Flag Vs Veto in taus

	1-Prong	3-Prong
hadronic Taus	18672	5333
# with at least one conversion	11178	2244
# true conversions tau	13534	1989
# true conversion in tau cone	14914	2063
# rec conversions in tau cone (true)	12108(69.9%)	2259(45.9%)
double	6307(51.6%)	1281(23.7%)
single	5801(89.7%)	978(74.9%)
# rec tracks in tau cone	42623	20560
electrons	16014(37.6%)	2168(10.5%)
pions	24082(56.5%)	17341(84.3%)
from other	2527(5.9%)	1051(5.1%)
# tracks from VxCandidates in tau cone	15532	2983
electrons	13385(86.2%)	1656(55.5%)
pions	1744(11.2%)	1181(39.6%)
other	403(2.6%)	146(4.9%)
% of tracks in tau cone vetoed	36.4%	14.5%
% of electron tracks in tau cone vetoed	83.6%	76.4%
% of pion tracks in tau cone vetoed	7.2%	6.8%
% of other tracks in tau cone vetoed	15.9%	13.9%

- Information loss in veto
- Cuts optimized to reject electrons
- optimal if using VxCanidate as a form of Pid in the tau cone, not on selecting taus
- Thoughts?