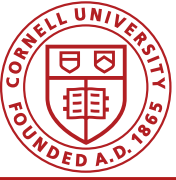


Summary of 5000 events

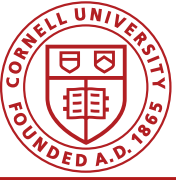
Kevin McDermott



Overview



- Want to validate Slava's 5000 event TTbar 35PU sample (mock noFWD) with G.C.'s original 100 event sample of same config
- As a reminder, merge seeds with sim tracks
 - Append hits onto seed tracks with hits from sim of same label (`seed.label() == mcTrackID`) after the seed hits
 - “Good Seeds” are `label() != -1`
 - “Good Hits” are hits with `mcTrackID() != -1`
- Sim track parameters evaluated at production point
- Seed track parameters evaluated at final seed layer
- **Red** is for 5000 event sample
- **Blue** is for 100 event sample



Basic Comparisons



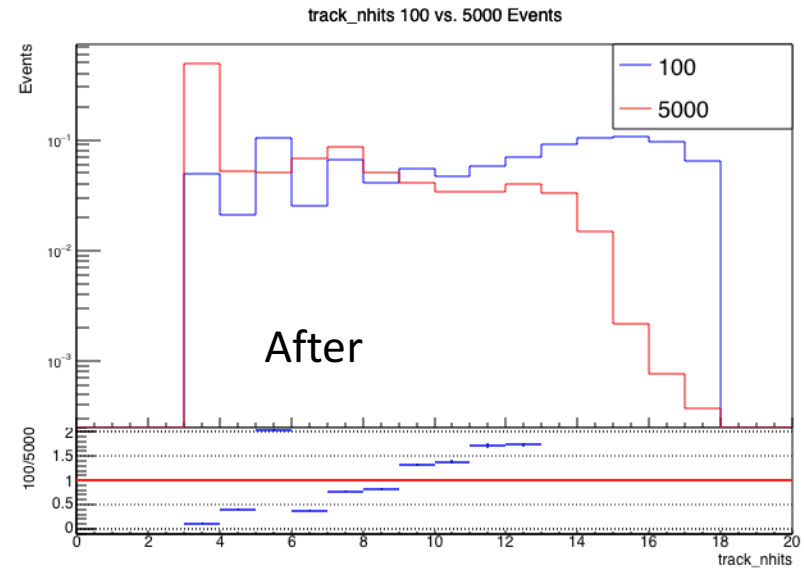
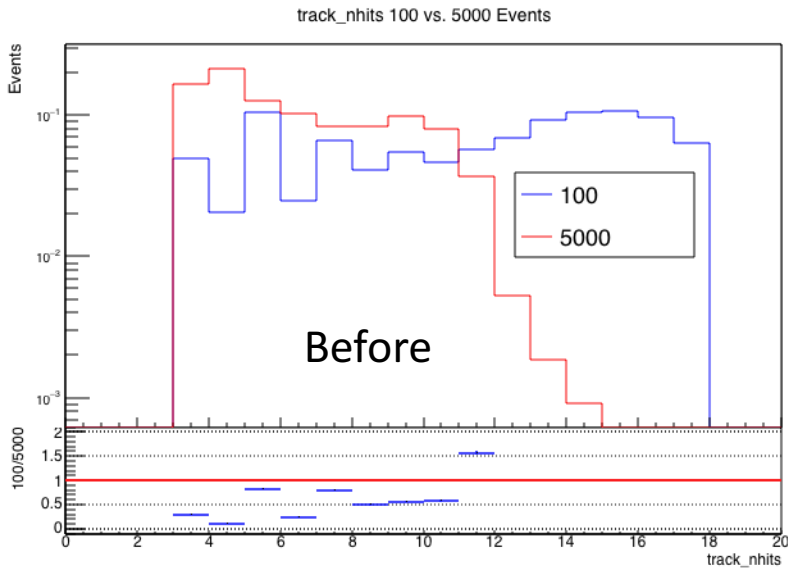
100 Event nHits Averages

Layer	All Hits	nGoodHits (label() != -1)
0	1705.44	1451.62
1	1474.41	1209.79
2	1334.22	1093.2
3	2727.7	2186.23
4	2758.2	2194.28
5	2309.23	1818.52
6	2307.97	1806.96
7	1973.27	1555.55
8	1663.17	1274.07
9	2282.1	1627.04
10	2295.84	1644.5
11	1978.25	1347.73
12	1951.18	1328.17
13	1578.79	1043.4
14	1276.35	787.46
15	1109.61	607.43
16	899.6	439.84

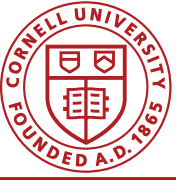
5000 Event nHits Averages

Layer	All Hits	nGoodHits (label() != -1)
0	828.346	637.67
1	880.909	653.134
2	1279.01	922.14
3	916.287	664.741
4	1381.4	993.886
5	921.448	665.304
6	1444.37	1034.28
7	1033.76	744.52
8	1416.49	959.952
9	2913.84	1887.6
10	1479.07	996.096
11	3023.39	1952.84
12	1538.98	1030.44
13	3144.72	2024.21
14	978.119	636.714
15	2647.87	1666.48
16	995.075	645.823

Per Event Average	100 events	5000 events
nSimTracks	19437	19731.3
nAllSeeds	444.23	441.87
nGoodSeeds (label() != -1)	324.86	324.26



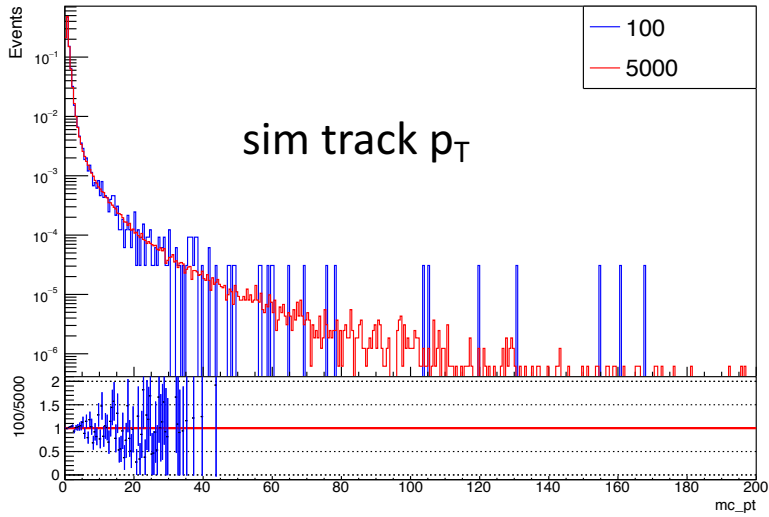
- **Before:** seeds in 5000 track sample had seed layer hits == -1
- **After:** simply just changed seed hit indices in 5000 track sample to be 0
 - Why not just use sim track hit index? Because for some reason sim track hits on the seed layers do not really exist (at most one hit for only a few tracks)
- N.B. Even 100 track sample had missing sim track hits on the third layer. Seed tracks hits did not always match sim track label either.



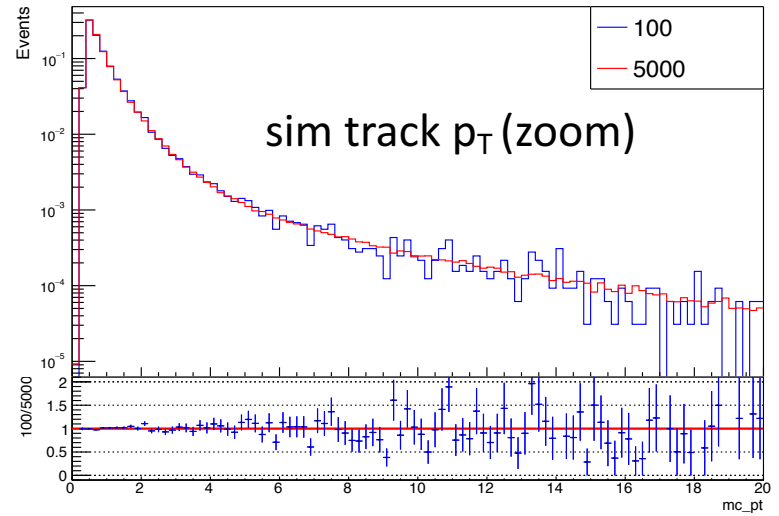
MC/Seed Comparisons, I



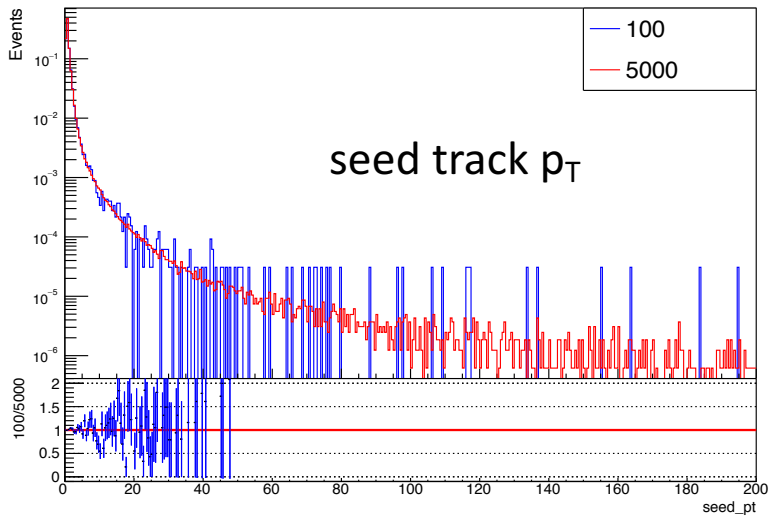
mc_pt 100 vs. 5000 Events



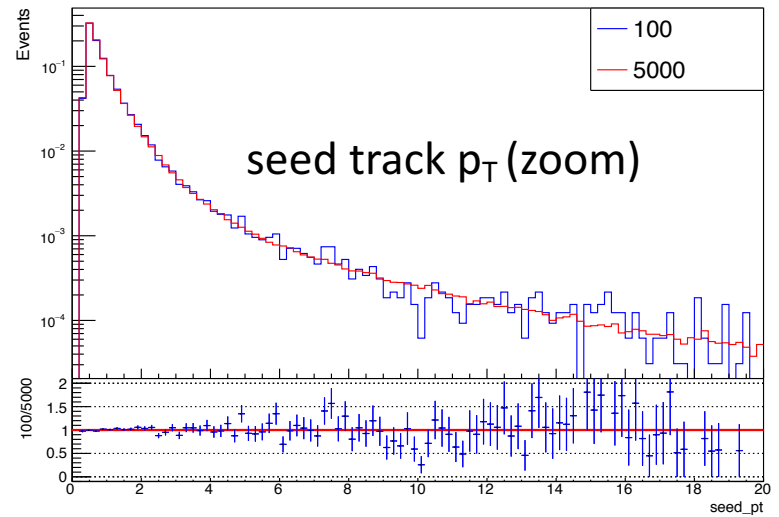
mc_pt 100 vs. 5000 Events

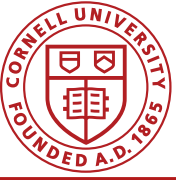


seed_pt 100 vs. 5000 Events

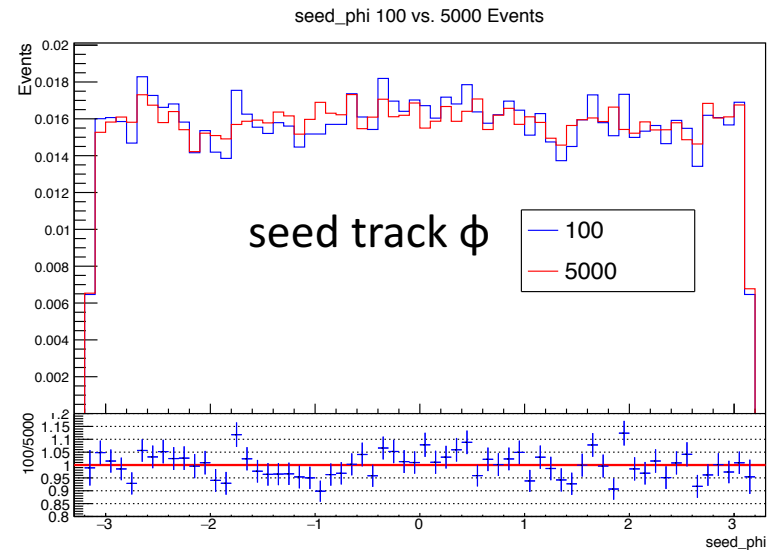
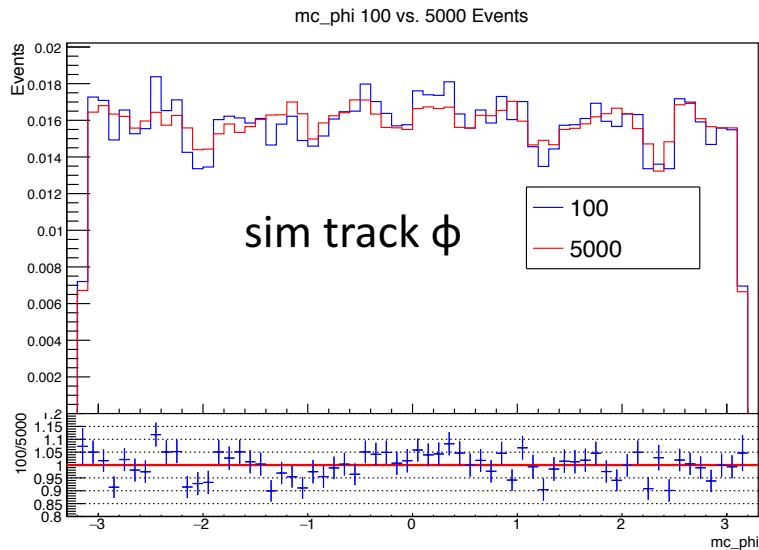
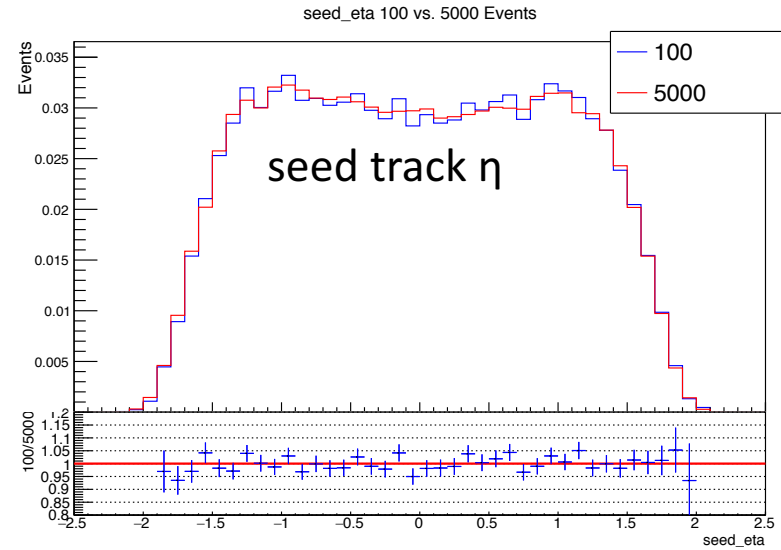
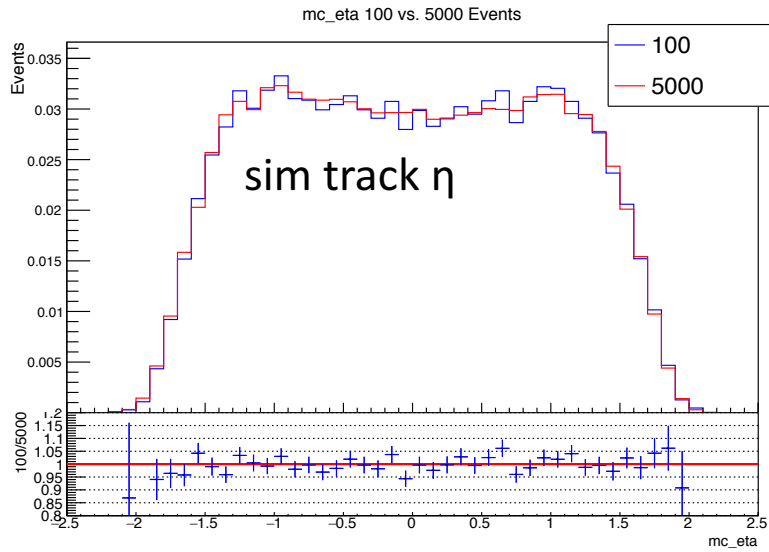


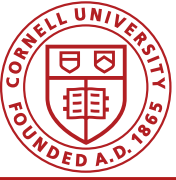
seed_pt 100 vs. 5000 Events





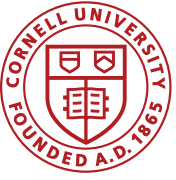
MC/Seed Comparisons, II



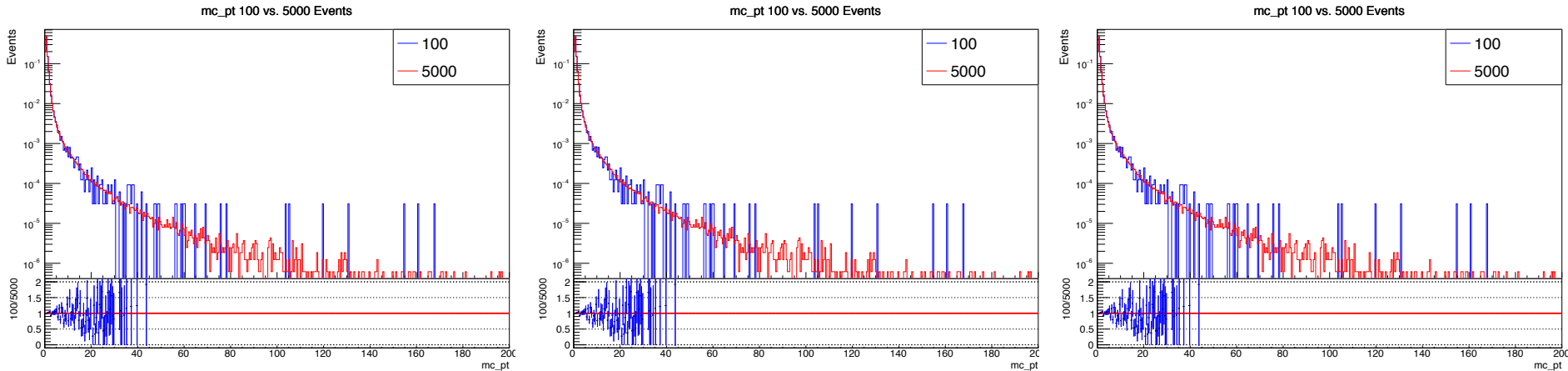


Conclusion

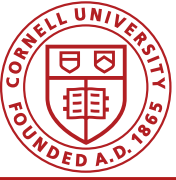
- This does not look to me to be the same configuration
 - nHits / layer / event is significantly different
 - nHits / track from the seeds+appended sim tracks is also wildly different
- However, basic track parameters look okay



Backup



- Pulls not a real fair comparison
 - Seed track parameters evaluated at seed layer
 - Sim track parameters evaluated at production point



Hit Indices

- Tracks have array of hit indices
 - Indices point to position in Event global vector of vector of hits (first vector the size of nLayers)
 - `trk.getHitIdx(ilyer)`
 - if `== -1`, then no hit on this layer
- Each hit has a `mcHitID()`, which points to position of global Event MC hit info (simple vector)
- MC hit info contains member for MC track ID
 - if `== -1`, then hit is not associated to any MC track