Muon Collider Full Simulation Studies

Shivani Lomte

Mar 4, 2022

Reconstruction runtime vs BIB fraction

With default Energy threshold cuts: **E = 50keV (ECal), 250keV (HCal)**

# events	seed #	%BIB	runtime(hh:mm)	OverlayBIB time(s)
1	634215041	10	2:51	70
1	1480357549	20	9:22	100
1	2051713085	30	19:14	200
1	634215041	50	running	running
5	1047694327	10	15:08	70

With tighter Energy threshold cuts: **E = 1MeV (ECal), 5MeV (HCal)**

# events	seed #	%BIB	runtime(hh:mm)	OverlayBIB time(s)
1	1480357549	10	00:05	70
1	1931561944	50	00:44	?
1	1931561944	100	03:53	?

Reconstruction runtime vs BIB fraction

- Runtime scales linearly with # events, and near quadratic in %BIB.
- Lower Energy threshold cuts given good jet reconstruction but huge runtime.
- With tighter E cuts, could run with full BIB (100%) in 4hrs per event. But degarded jet energy, and di-jet mass peak far from 125GeV.