

Update 08-25-2025

The GELATO Team



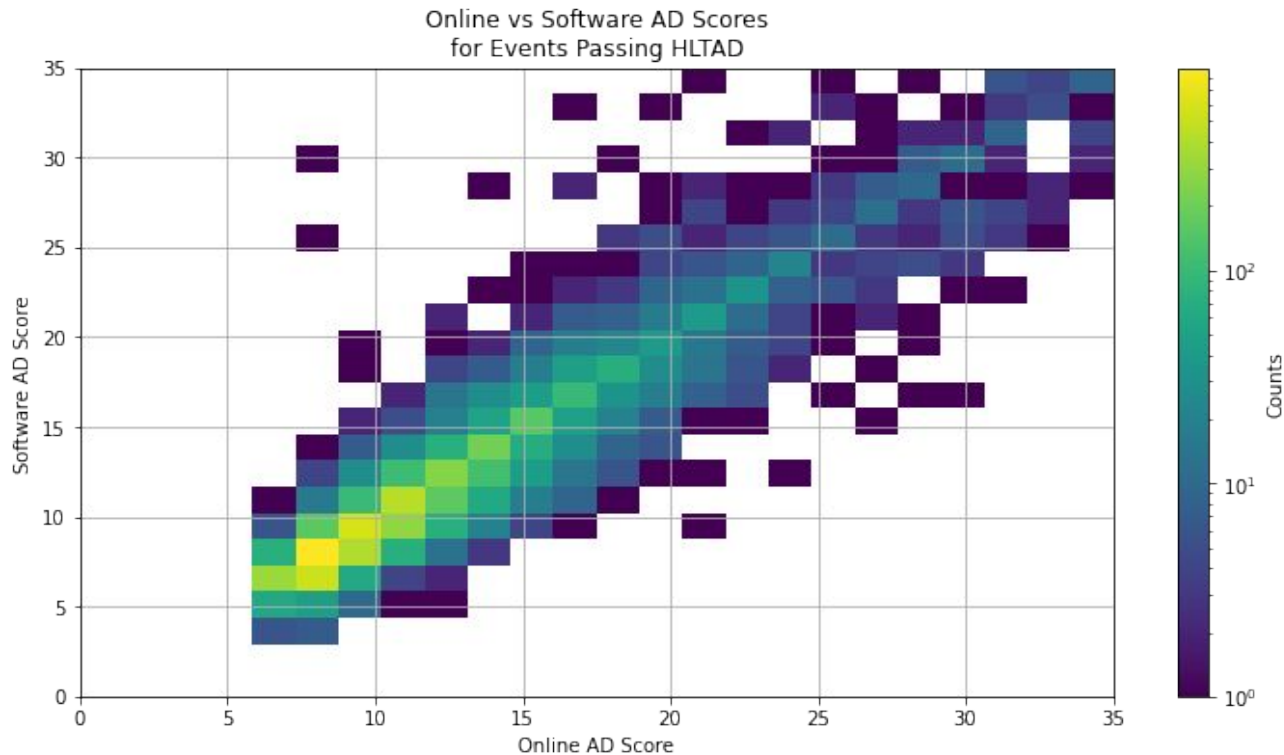
New ntuples

- Sagar added HLT Electron and Photon IDs, so I remade all of the ntuples (EB24, EB25, MC) with all of the updated information that matches ATHENA

	New ntuples	Old ntuples
Jets	HLT_AntiKt4EMTopoJets_subjeslS	HLT_AntiKt4EMPFlowJets_subresjesgscIS_ftf
Electrons	HLT_egamma_Electrons_GSF	HLT_egamma_Electrons_GSF
Muons	HLT_MuonsCB_Rol	HLT_Muons_FS
Photons	HLT_egamma_Photons (with loose ID)	HLT_egamma_Photons
MET	tcpufit	tcpufit

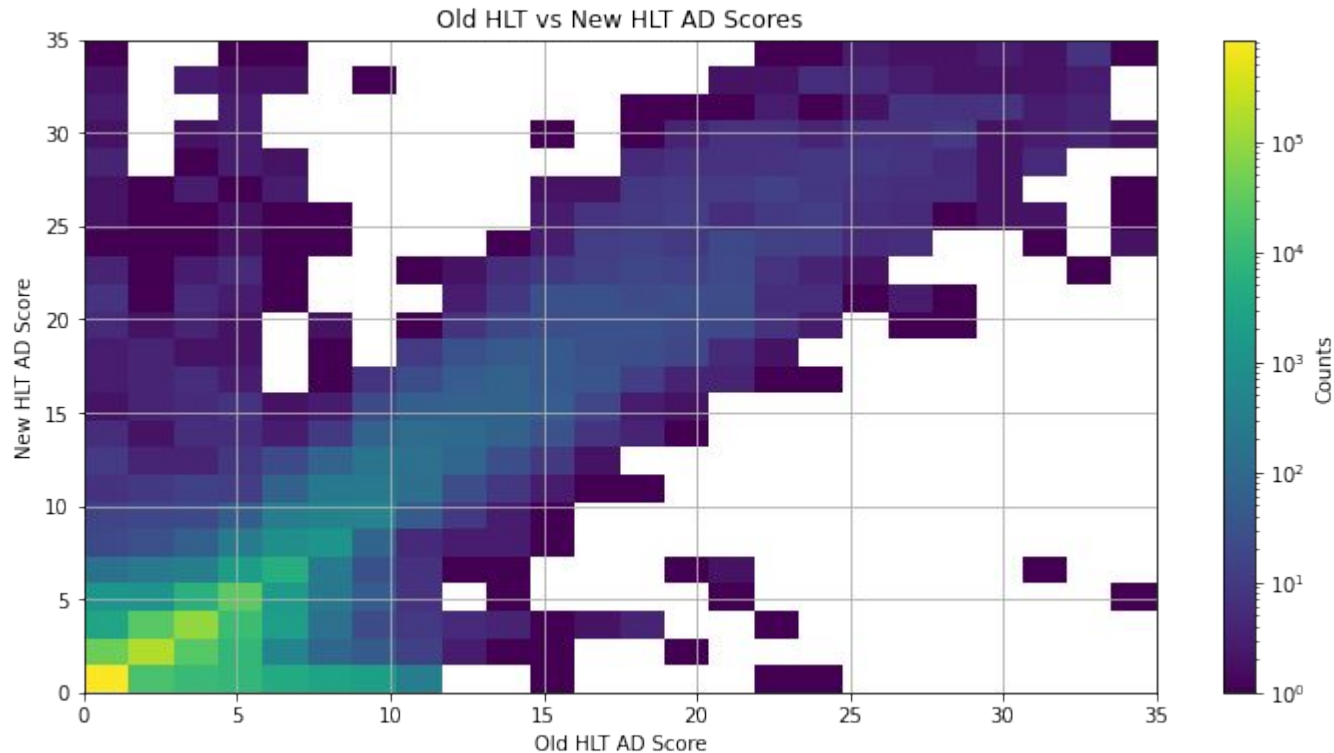
New ntuples

However, even though the inputs now look the same (over the 3 events that Kaito and I checked), I am still seeing differences between online and software scores :(



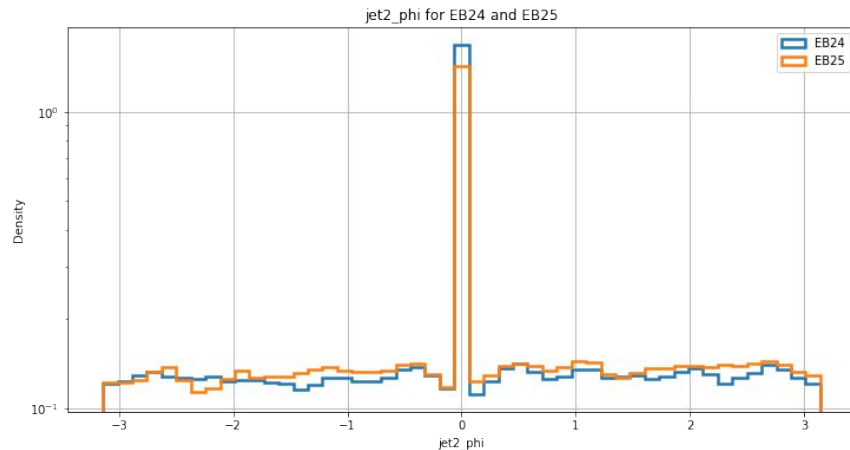
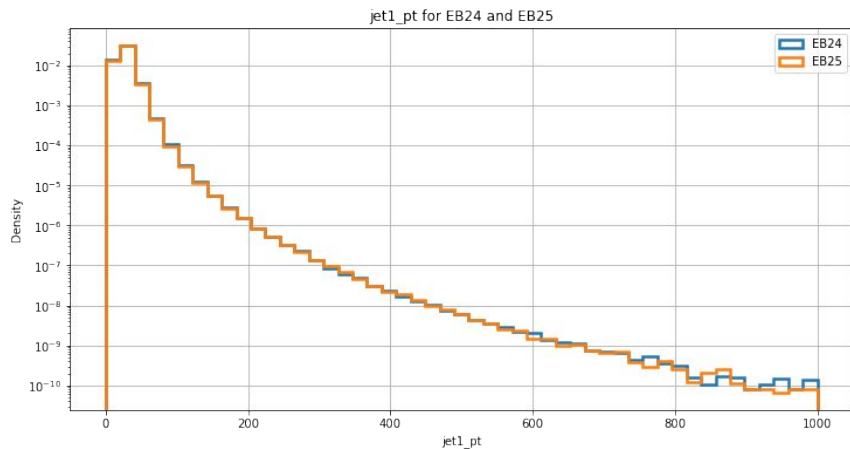
New ntuples

Additionally, the new containers cause differences in the scores compared to the old values over EB24



New ntuples

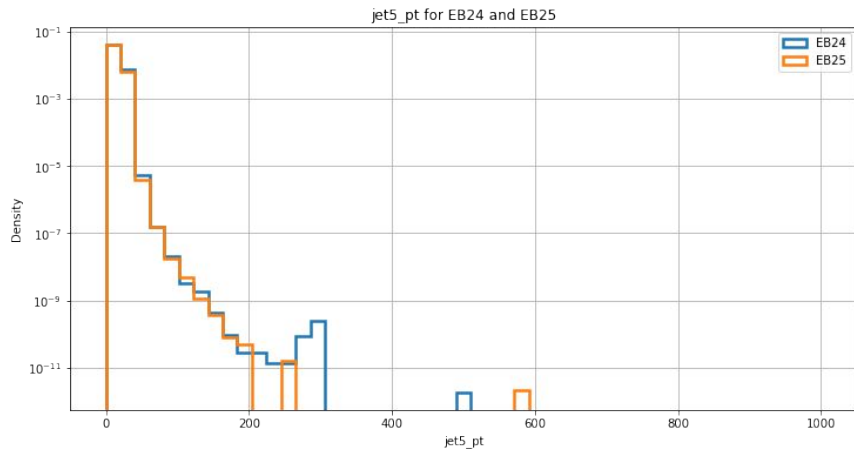
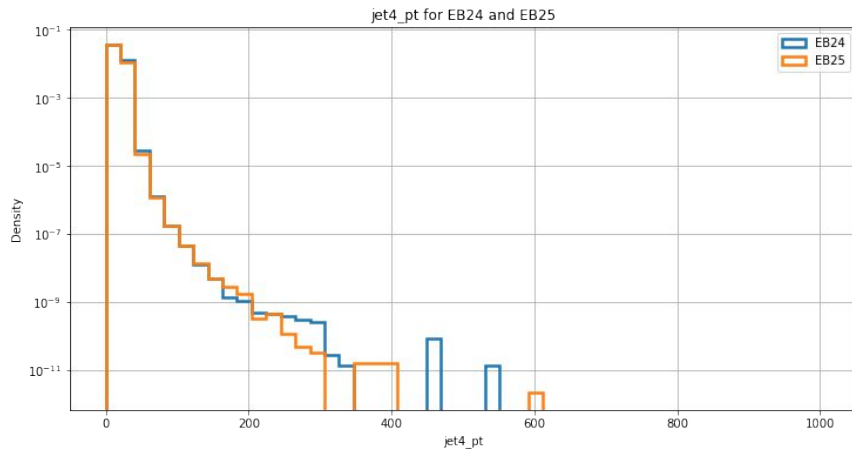
Now that I processed EB24 and EB25 with all of the same containers, we can look again at the comparison of kinematic plots



Mostly I saw good agreement

New ntuples

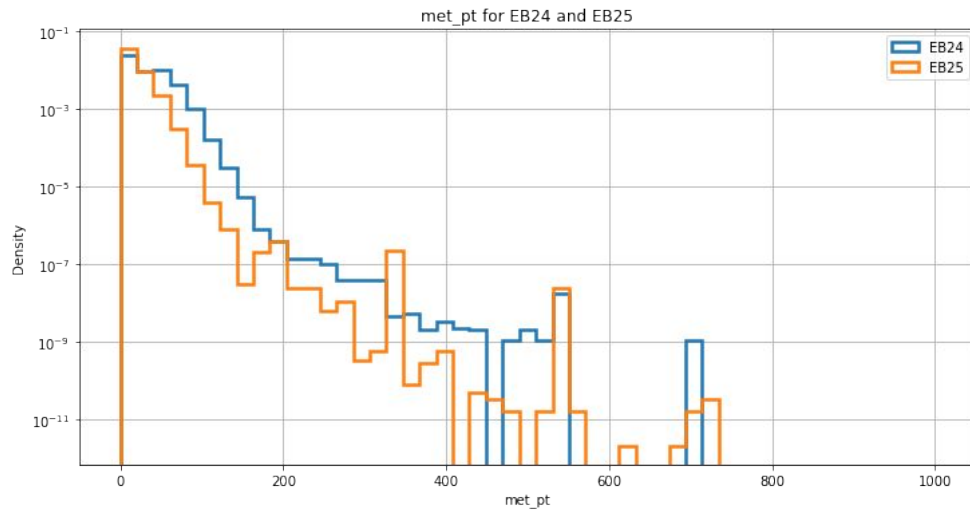
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Some differences in later jet pts

New ntuples

Now that I processed EB24 and EB25 with all of the same containers, we can look again at the comparison of kinematic plots



Substantial differences in MET pt

New ntuples

There still seem to be differences between EB24 and EB25 that cause rates to be different

Using the thresholds corresponding to that in ATHENA, I calculated:

- EB25 online unique rate: 2.22 Hz
- EB25 software unique rate: 3.11 Hz
- EB24 software unique rate: 16.69 Hz

It is still unclear to me what is causing this difference

- Could the MET be causing this much of a difference?

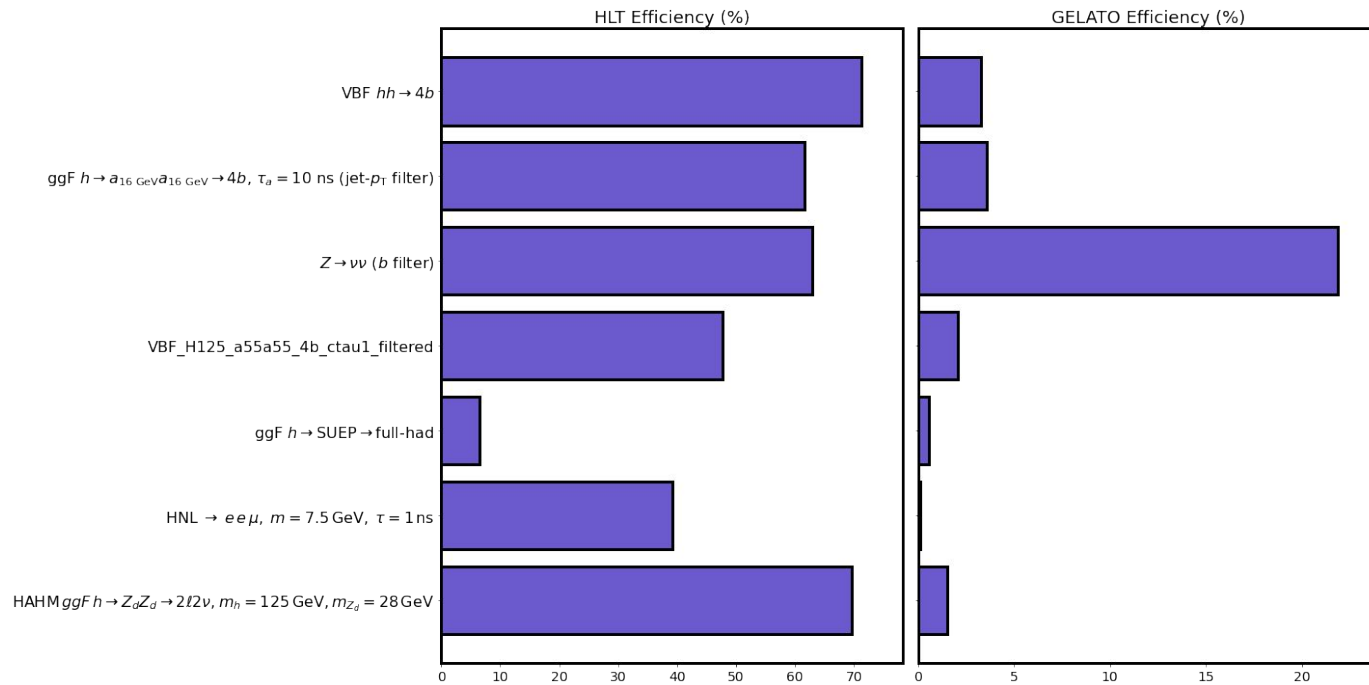
New ntuples

Even though we don't fully understand the differences, I re-did performance studies with the new EB24 ntuples

NOTE: It is difficult to use EB25 to run the performance studies because L1AD was included in the EB menu, and there are substantial overlaps between many of the EB items. I haven't done the studies to see how large this effect is, but my guess is that there would not be enough stats

As a reminder, the thresholds in ATHENA are yielding ~ 16 Hz unique on EB24. So for the other trigger types (jet pt, lepton pt, etc), I found the threshold to yield the same unique rate

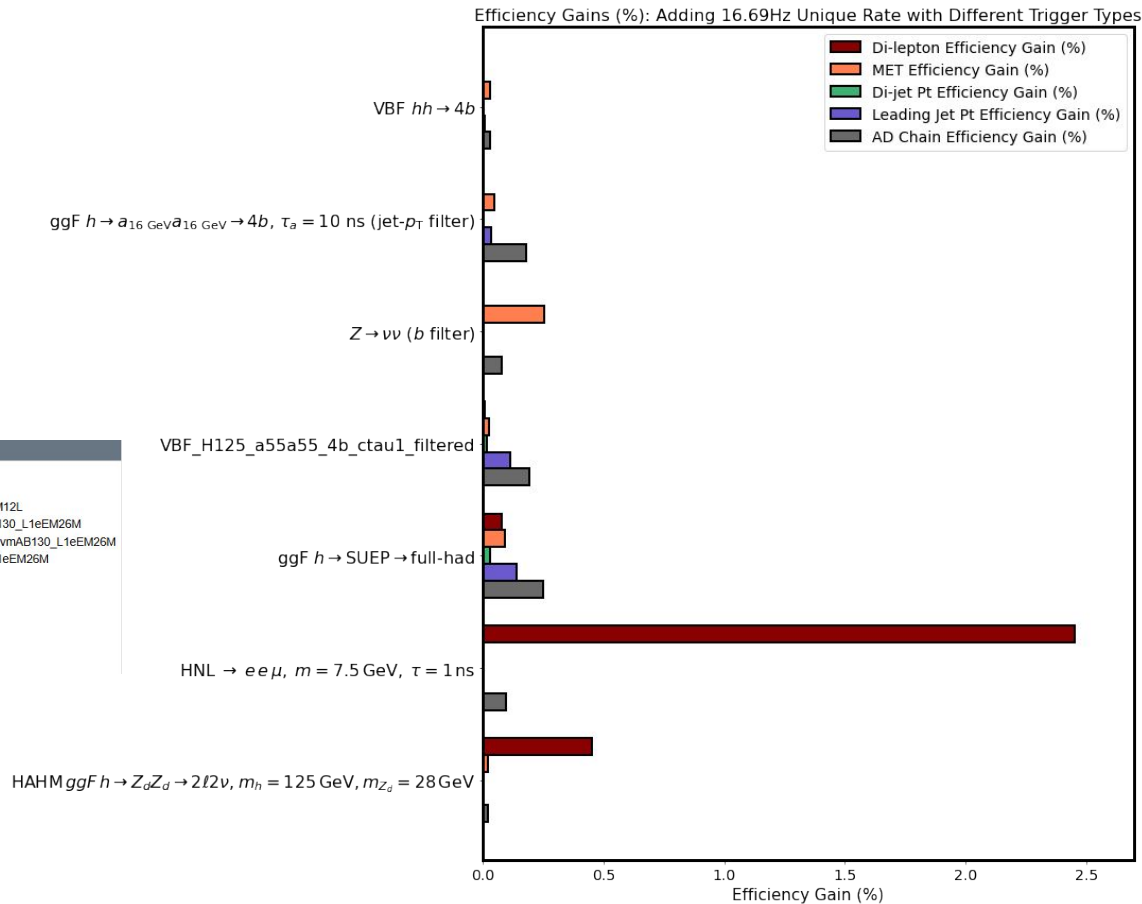
New ntuples



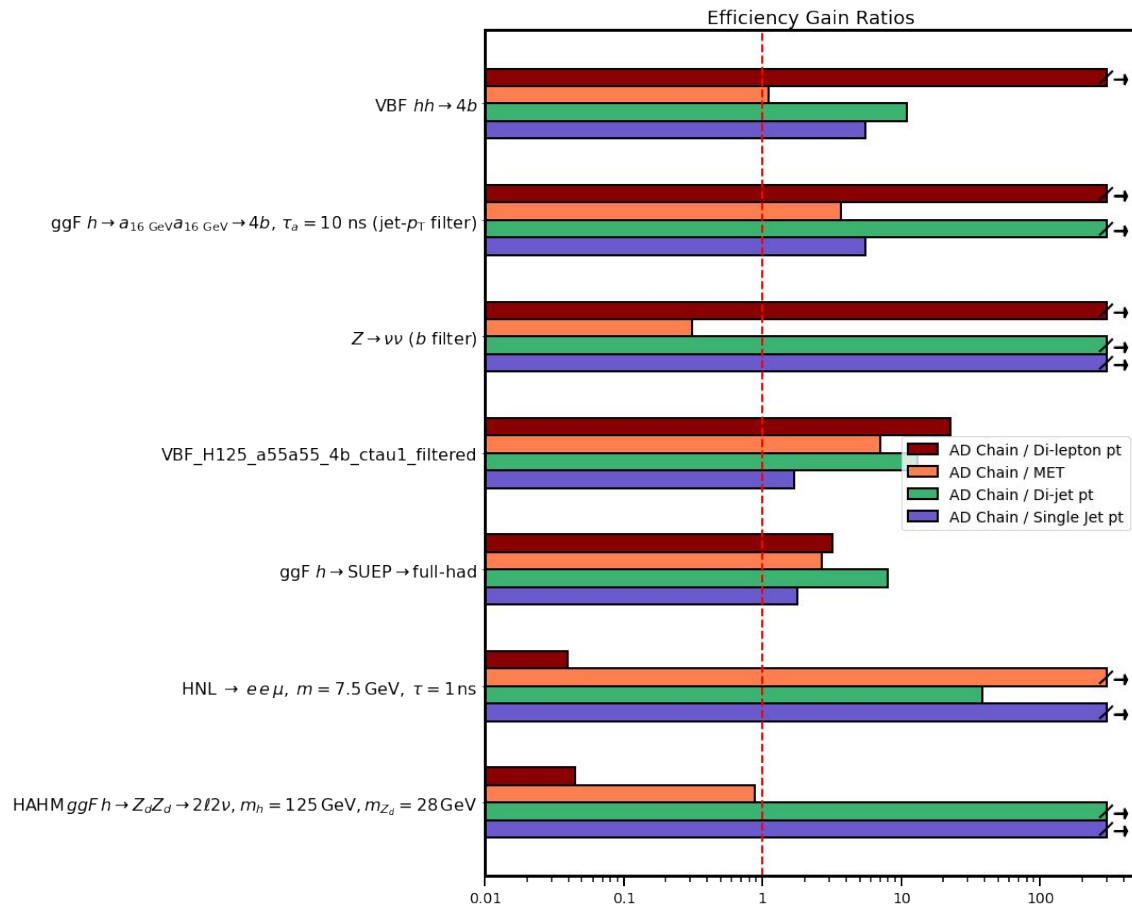
New ntuples

- NOTE: I used LHTight ID for double electron trigger when I should have used LHVLoose

Trigger Group	Single electron	Multi electron
From 75 bunches	HLT_e26_lhtight_lvarloose_L1eEM26M HLT_e26_lhtight_lvarloose_L1eEM26T HLT_e20_lhtight_lvarloose_L1ZAFB-25DPHI-eEM18M HLT_e26_lhtight_lvarmedium_L1eEM26M HLT_e26_lhtight_lvarlight_L1eEM26M HLT_e60_lhmedium_L1eEM26M HLT_e140_lhloose_L1eEM26M HLT_e140_lhloose_noringer_L1eEM26M HLT_e300_etcut_L1eEM26M	HLT_2e17_lhvloose_L12eEM18M HLT_2e24_lhvloose_L12eEM24L HLT_e24_lhvloose_2e12_lhvloose_L1eEM24L_3eEM12L HLT_e26_lhtight_e14_idperf_light_probe_50lnvmAB130_L1eEM26M HLT_e26_lhtight_e14_idperf_light_nogsf_probe_50lnvmAB130_L1eEM26M HLT_e26_lhtight_e14_etcut_probe_50lnvmAB130_L1eEM26M
	Large-radius tracking HLT_e30_lhloose_nopix_lrtmedium_L1eEM26M	



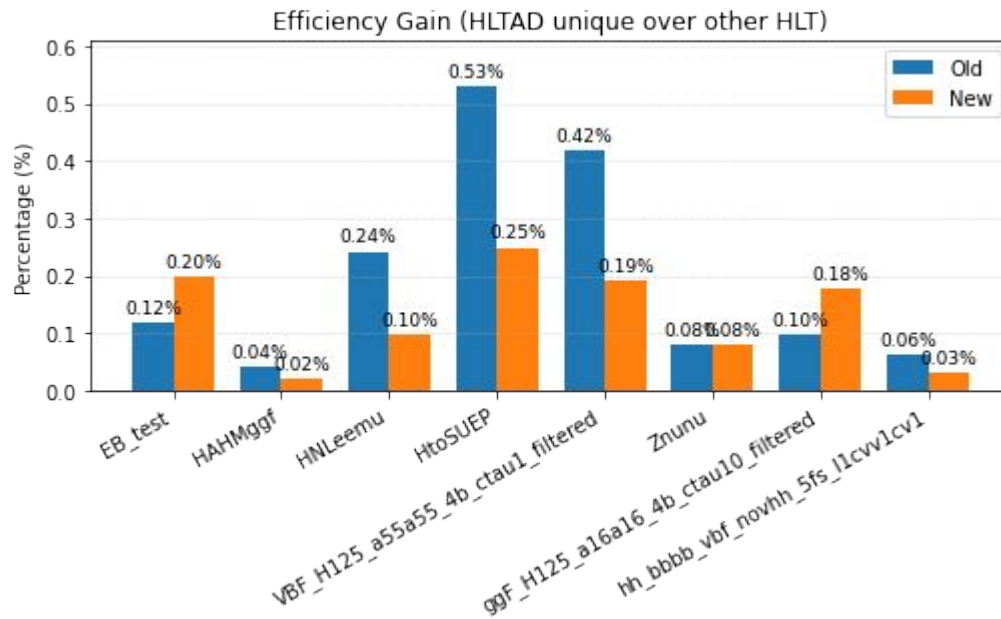
New ntuples



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Many of our efficiency gains went down with the new ntuples :(

How large is this effect?



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