Inclusive charged jet spectrum and Rcp and Raa in Run 3 Pb-Pb

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https://alice-notes.web.cern.ch/node/1559

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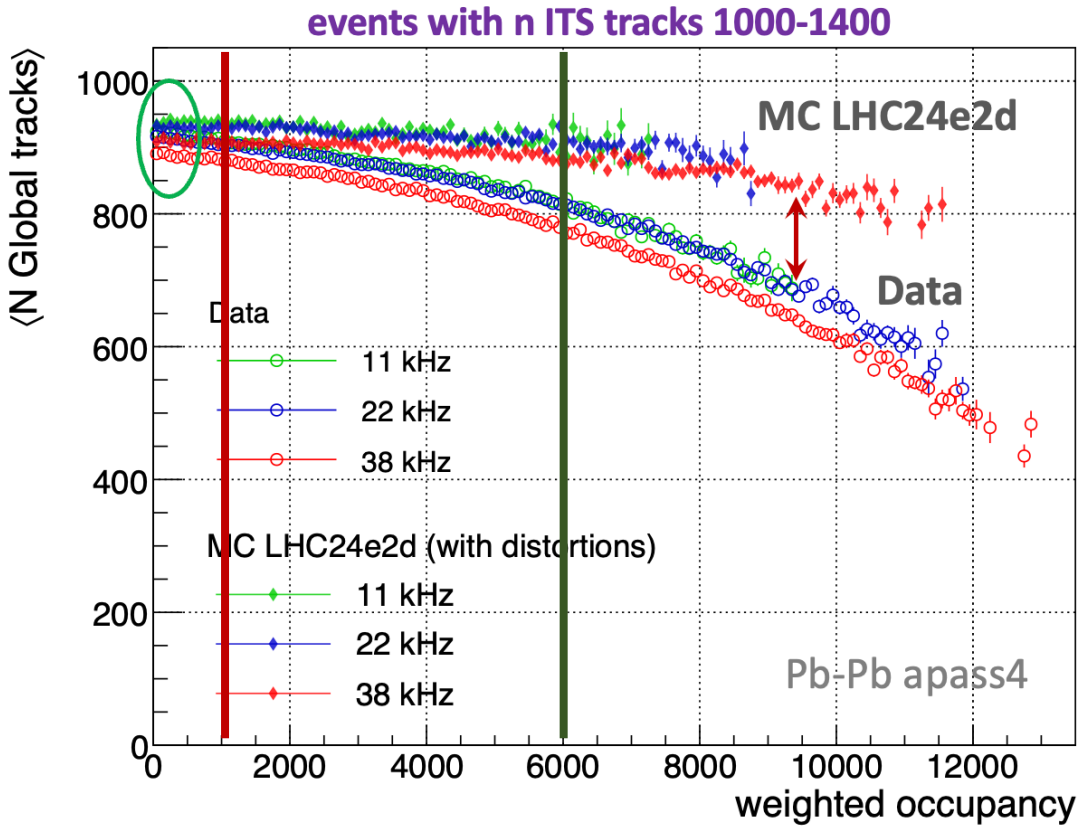
Occupancy and IR effects

- Occupancy not well described by MC
- Occupancy has serious effect on efficiency at high values

- IR effect well described by new MC, but has effect on efficiency independent from the occupancy

➔ We will cut on occupancy at 1000;

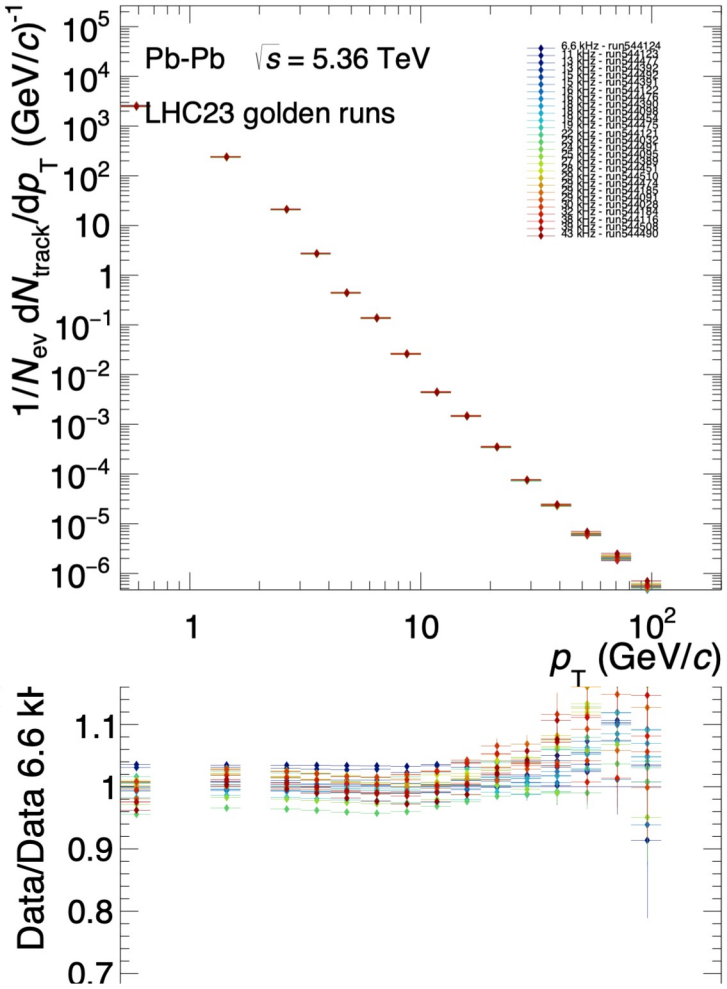
➔ IR effects look small on tracks, what about jets?



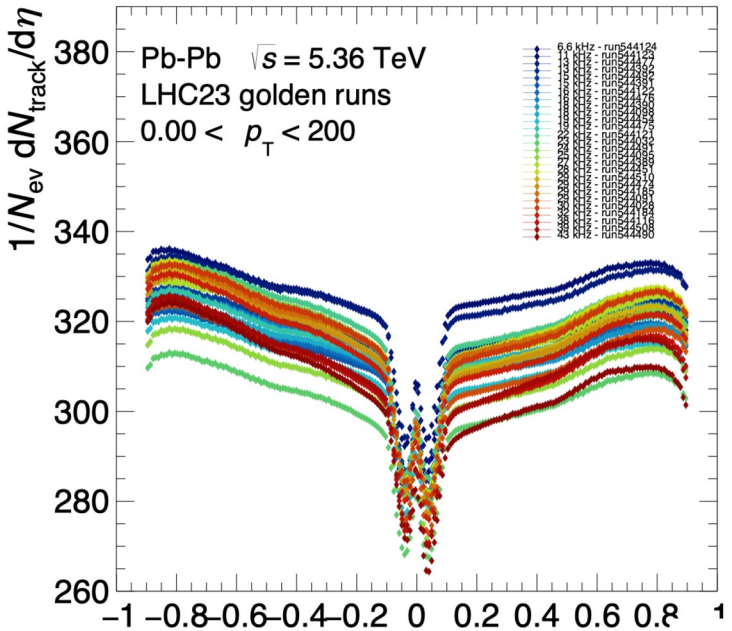
Occupancy vs <Ntracks>
presented by Igor at Physics Week

Occupancy cut: 6k (didn't have train available with that many runs for 1k)
Dataset: LHC23 Golden runs

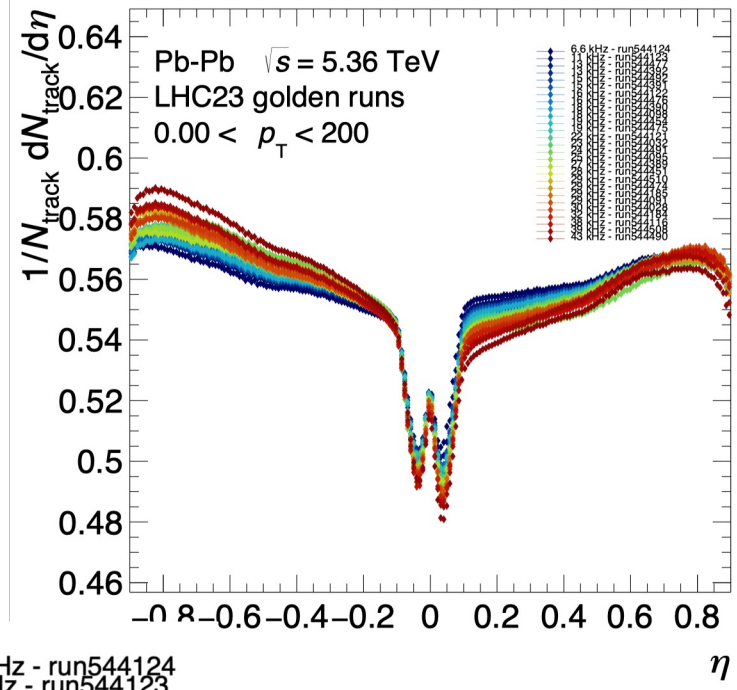
IR dependence of Track observables



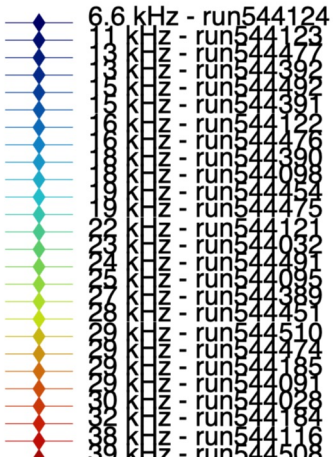
ratio to lowest IR



Normalised to Nevts



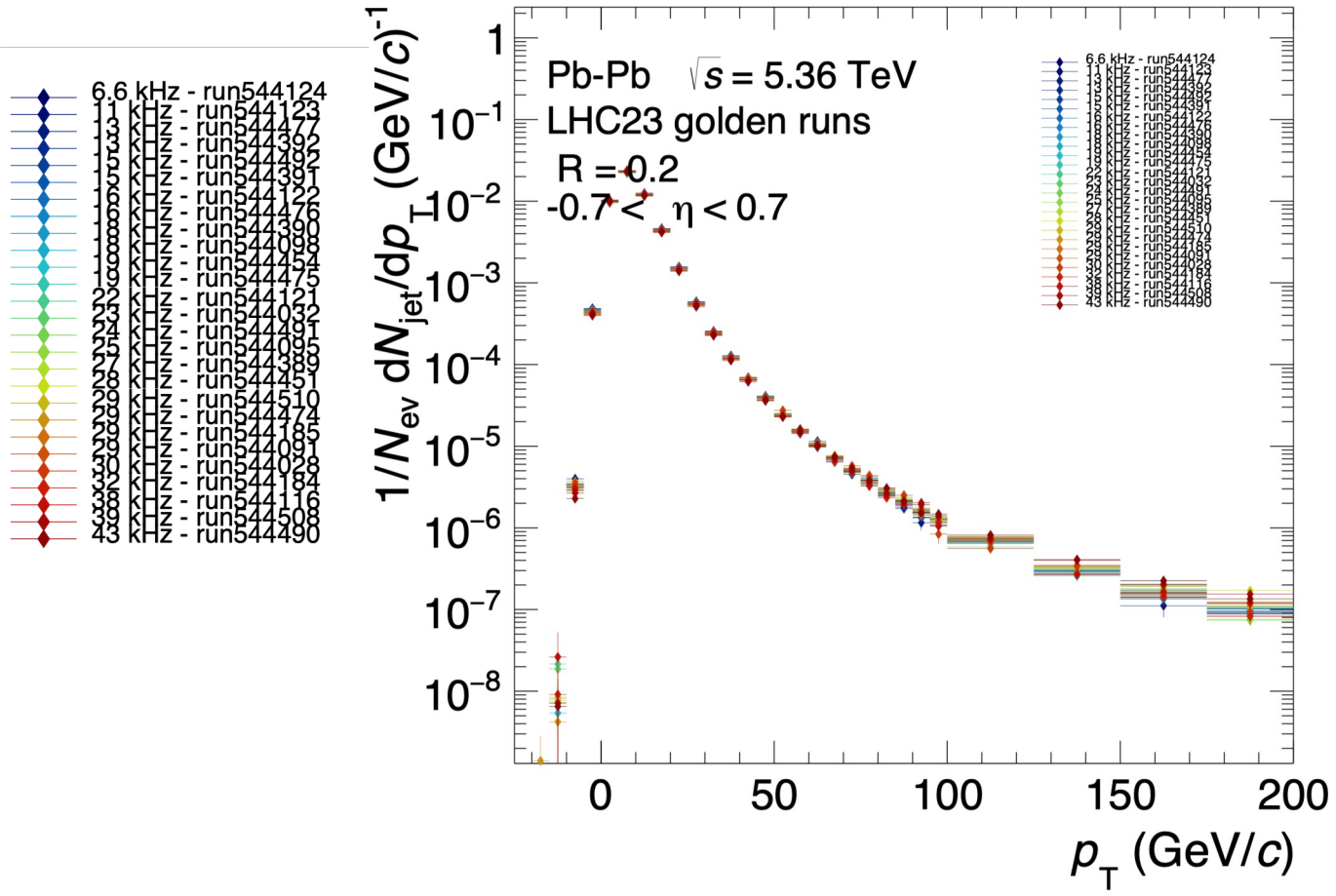
Normalised to Ntracks



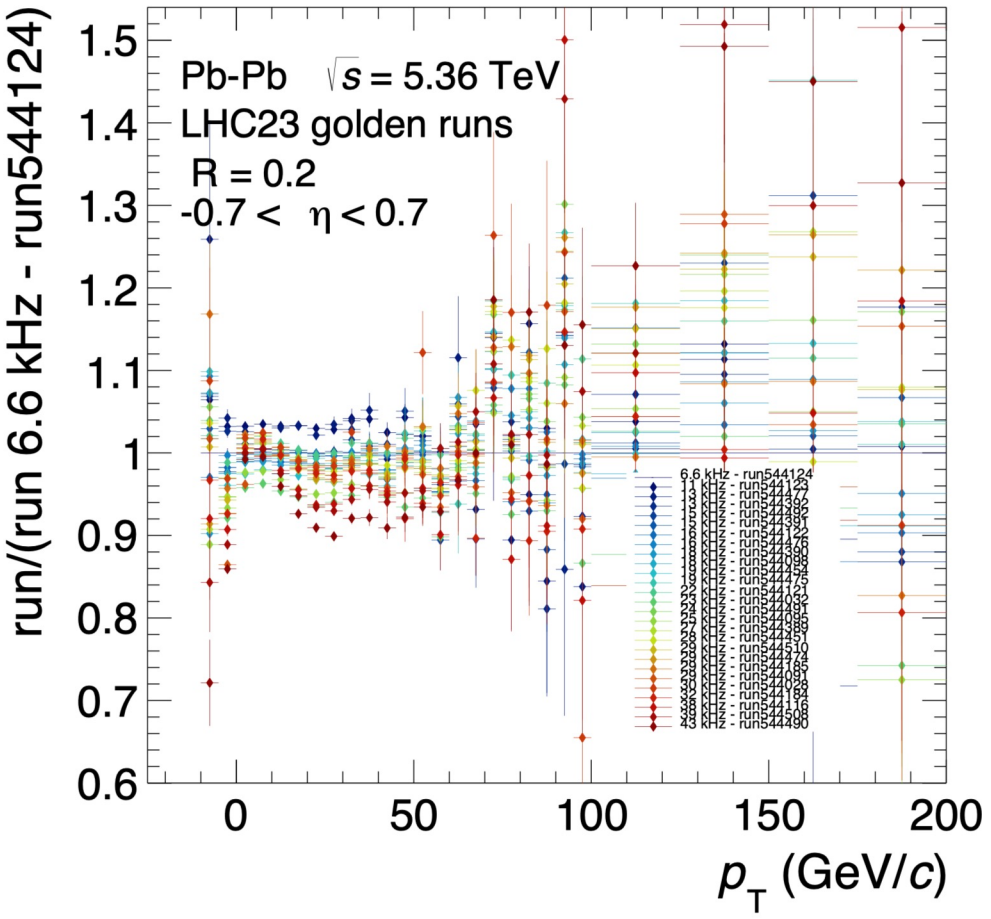
Occupancy cut: 6k (didn't have train available with that many runs for 1k)
Dataset: LHC23 Golden runs

Choice of IR baseline for ratio looks not ideal

IR dependence of Jet observables: pt



pT – A*rho

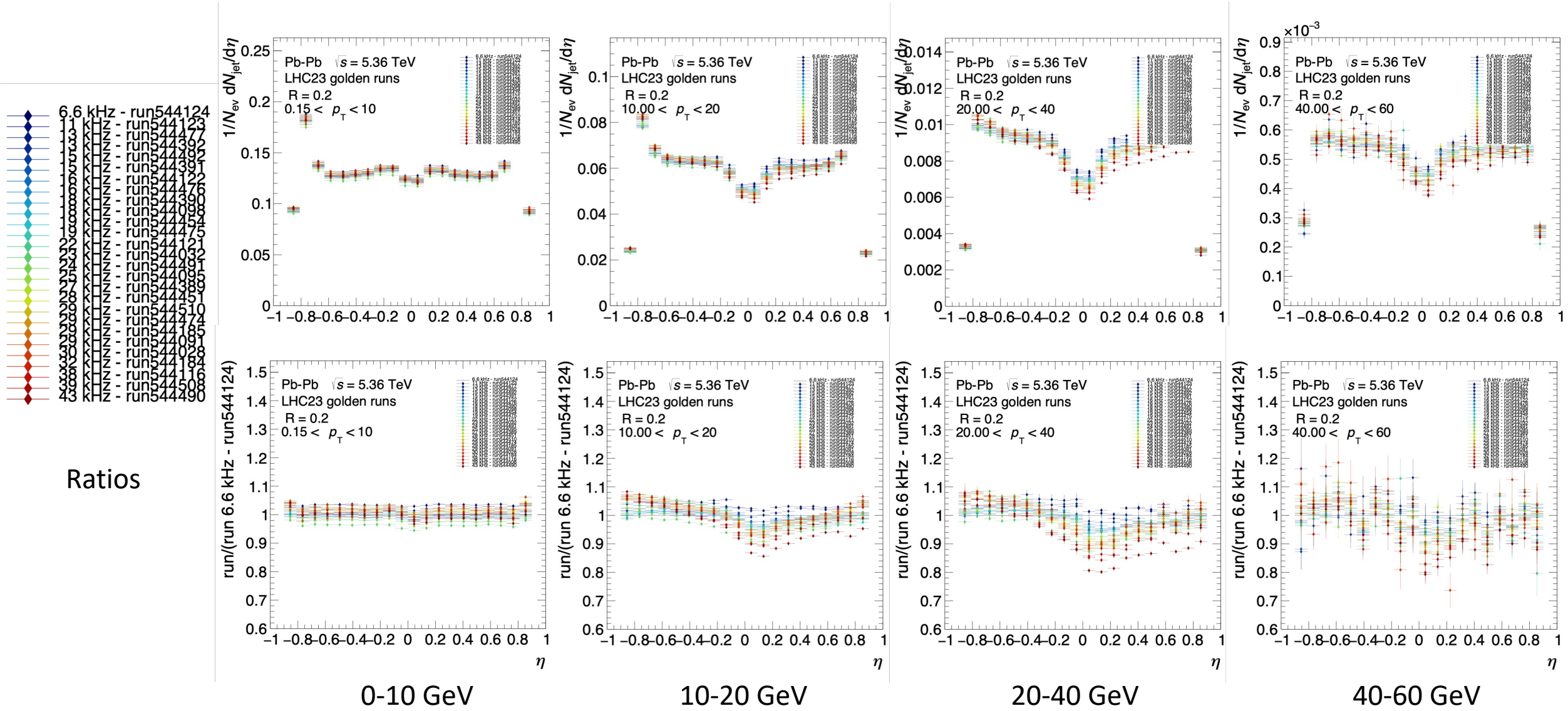


Ratio to lowest IR

Occupancy cut: 6k (didn't have train available with that many runs for 1k)
Dataset: LHC23 Golden runs

Choice of IR baseline for ratio looks not ideal

IR dependence of Jet observables: eta



Occupancy and statistics in smaller dataset

LHC23zzh pass 4, R = 0.2 (190.7 TB)

Jets

$$\frac{N_{sel.\ jets}^{p_T \in [x,y]}(occ.\ in\ [a,b])}{N_{sel.\ jets}^{p_T \in [x,y]}(occ.\ in\ [0,20k])}$$

Occupancy window	% of selected jets in 00-10 GeV/c	% of selected jets in 10-20 GeV/c	% of selected jets in 20-40 GeV/c	% of selected jets in 40-60 GeV/c	% of selected jets in 60-200 GeV/c
0-1k occupancy	56%	57%	58%	58%	57%
1-2k occupancy	18%	18%	18%	18%	18%
2-6k occupancy	24%	23%	22%	22%	22%
6-10k occupancy	2.6%	2.2%	2.0%	2.1%	2.1%
10-20k occupancy	0.1%	0.09%	0.07%	0.09%	0.1%

here pT is after rho subtraction

Collisions

$$\frac{N_{sel.\ coll.}^{cent \in [x,y]}(occ.\ in\ [a,b])}{N_{sel.\ coll.}^{cent \in [x,y]}(occ.\ in\ [0,20k])}$$

Occupancy window	% of selected collisions in 00-10 %	% of selected collisions in 10-20 %	% of selected collisions in 20-40 %	% of selected collisions in 40-60 %	% of selected collisions in 60-70%
0-1k occupancy	59%	59%	59%	59%	59%
1-2k occupancy	19%	18%	18%	18%	18%
2-6k occupancy	20%	20%	20%	20%	20%
6-10k occupancy	1.0%	1.1%	1.1%	1.2%	1.2%
10-20k occupancy	0.02%	0.02%	0.03%	0.03%	0.03%

Cut at 1k only 40% loss

Year	Period	Fill	Run (in gray those not to be reconstructed for now) (in red those at high IR)	<INEL> (Hz) from ZDC	<INEL> (Hz) from ZDC - start of run	<INEL> (Hz) from ZDC - mid of run	<INEL> (Hz) from ZDC- end of run	N. INEL events
2023	LHC23zzf	9225	544013	6278.43	7978.71	6206.52	3879.25	28083417.4
	LHC23zzg	9226	544028	30336.7	30498.8	30446.2	29755.3	7887542.0
			544032	23718.5	26943.9	23643.3	20816.9	66625266.5
			544033	4957.46	18413.2	0	0	1293897.1
	LHC23zzh	9231	544091	29326.7	31151.7	29355.4	27852.6	39591045.0
			544095	25101.8	26522.3	25147.8	23464.8	38983095.4
			544098	18005.6	22626.2	17933.8	45.532	123140298.4
		9232	544116	38342	38999.9	38423.2	37171.2	16257008.0
			544121	22543.5	27147.2	22376.2	18718.5	108592039.5
			544122	16559.5	18279.4	16517.8	15218.5	51947151.5
			544123	11629.7	14585	11426.8	8776.86	134892890.3
			544124	6610.2	8566.13	7691.65	51.5254	34227615.6
			544126	51.437	50.3408	52.6993	3.85591	432379.4
	LHC23zzi	9234	544167	45633.8	45878.9	45634.2	45726.5	11636619.0
		9235	544180	45755.2	45990.2	45741.9	45526	8418956.8
			544184	32927.3	35432.5	32929.9	30800.5	45571383.2
			544185	28727.2	29917.9	28737.5	27866.2	22780669.6
		9237	544384	41927	43731.4	41749.5	40897.3	25030419.0
			544389	26876.1	35029.7	26462.2	20735.6	187487673.6
			544390	17959.1	19252.5	17978.1	16963.5	44341017.9
			544391	14724.2	16126.3	14464.7	13311.6	53772778.4
			544392	12663.5	13118.5	12812.3	9904.56	13258684.5