Weekly Report

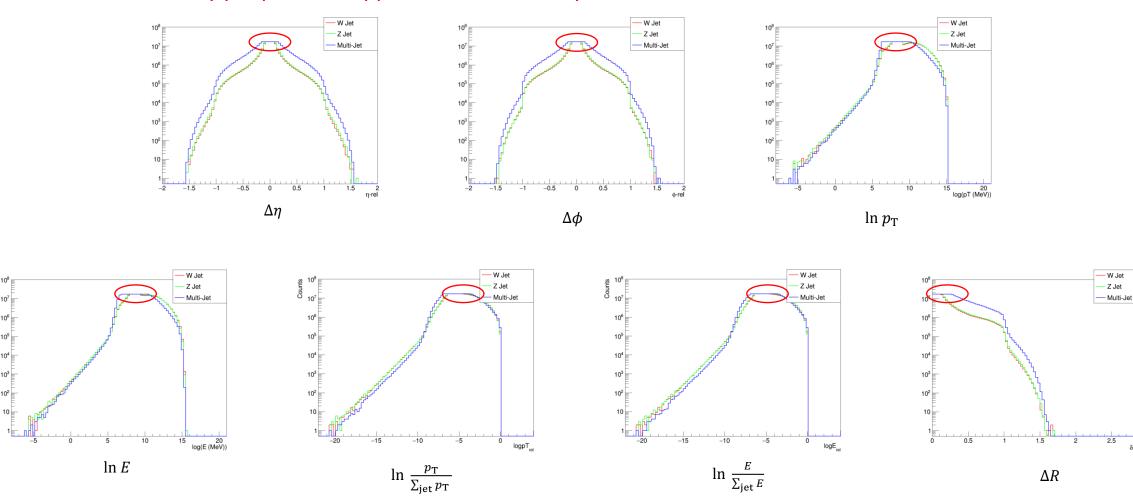
Shudong WANG

ITk

- Developing IHEP ATLAS ITk Production Management Page
- Workflow management ∨
- Task assignment V
- Inventory check √
- Will use MySQL to store data in the future with Shuiting's help (now I just write data to a .pkl file)

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×	🏠 Homepage	=	×	Inventory Statistics Unused Parts Counts Module related
IHEP ATLAS-ITK	📌 Bulletin Board		Production Flow Page Powered by <u>itldb</u> \$	Hybrid X FPA Hybrid Y PPA Powerboard V3 Sensor IS ATLAS18 Sensor IS ATLAS18 O O 1 1 O Ø Hybrid related Hybrid Flex YPA Hybrid Flex YPA HCSSLar VI
Select Benne: Overview Hybrid Shipment Select age: Homegag investory	Nothing here		Select theme: Overview O Hybrid	1 0 15 21 Stow all parts counts •
	3 2022-11-14 @ 15:16 Enter password 1	٥	Module Shipment SetAct page: Homepage Inventory Broom Cupboard	Inventory by Types
Broom Cupboard Renew token here	Enter password 2	0	Renew token here	Modules Hybrids Powerboards Sensors Hybrid Flews AECStar Chips HCCStar Chips Modules
No client set, get token on homepage first	Get Token No token yet registed		Token expires at: 2022-11-14 15:49 Renew Token	Local Name ATLA SN Local Name Current Local Same Current Local Same Current Local Same Next Operation Next Opera

• Distributions of the seven constituent-level quantities used as inputs to tagger



Asked by people: flat-topped distribution, why?

2022/11/14

10⁵ 104

10³

10²

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δ R-rel

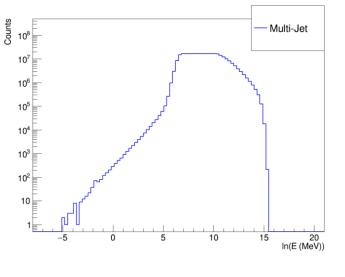
• jet requirements

We thought it might be because of those cut

Jet requirements	W jet requirements	Z jet requirements
Jet $ \eta < 2.0$ Jet $p_{T,truth} > 200$ GeV Number of constituents ≥ 2 Jet mass > 40 GeV	$\label{eq:rescaled} \begin{array}{l} dR({\rm truth~jet,~MC~truth~W}) < 0.75 \\ {\rm Ungroomed~truth~jet~mass} > 50~{\rm GeV} \\ {\rm Number~ghost~associated~b-hadrons == 1} \\ {\rm Truth~jet~} \sqrt{d_{12}} > 55.25 \times \exp(-2.34 \times 10^{-3} \times {\rm Jet~} p_{\rm T,truth}) \end{array}$	dR(truth jet, MC truth Z) < 0.75 Ungroomed truth jet mass > 50 GeV Truth jet $\sqrt{d_{12}}$ > 55.25×exp($-2.34 \times 10^{-3} \times \text{Jet}$ $p_{\text{T,truth}}$)

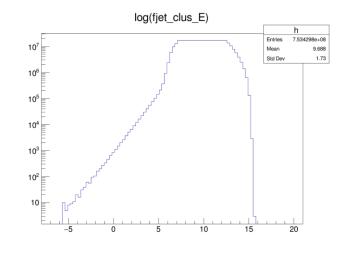
• Distributions of the seven constituent-level quantities used as inputs to tagger

no cut (without any selection), but still...



ln E

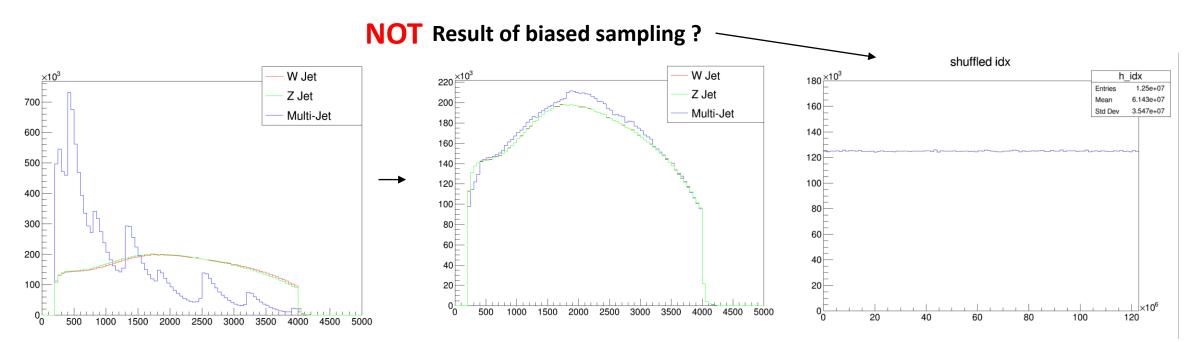
W, Z mixed (can't separate W,Z when no cut applied)



ln E

at least, not our problem

• Problem found



- Weights gained by using all sig(13M+) & bkg (1.2B+) events, then do the sampling to get 1:1 sig/bkg ratio (12.5M: 12.5M) and apply weights*sf as training weights.
- Won't affect the result much, but need to be improved. Will try to do reweighting first and

then do the sampling

- Will try Z tagging and W vs Z classification this week
- Will try ParticleTransformer this week