

Momentum-Weighted Jet Charge

Jet Charge for $\kappa = 0.0$

Data

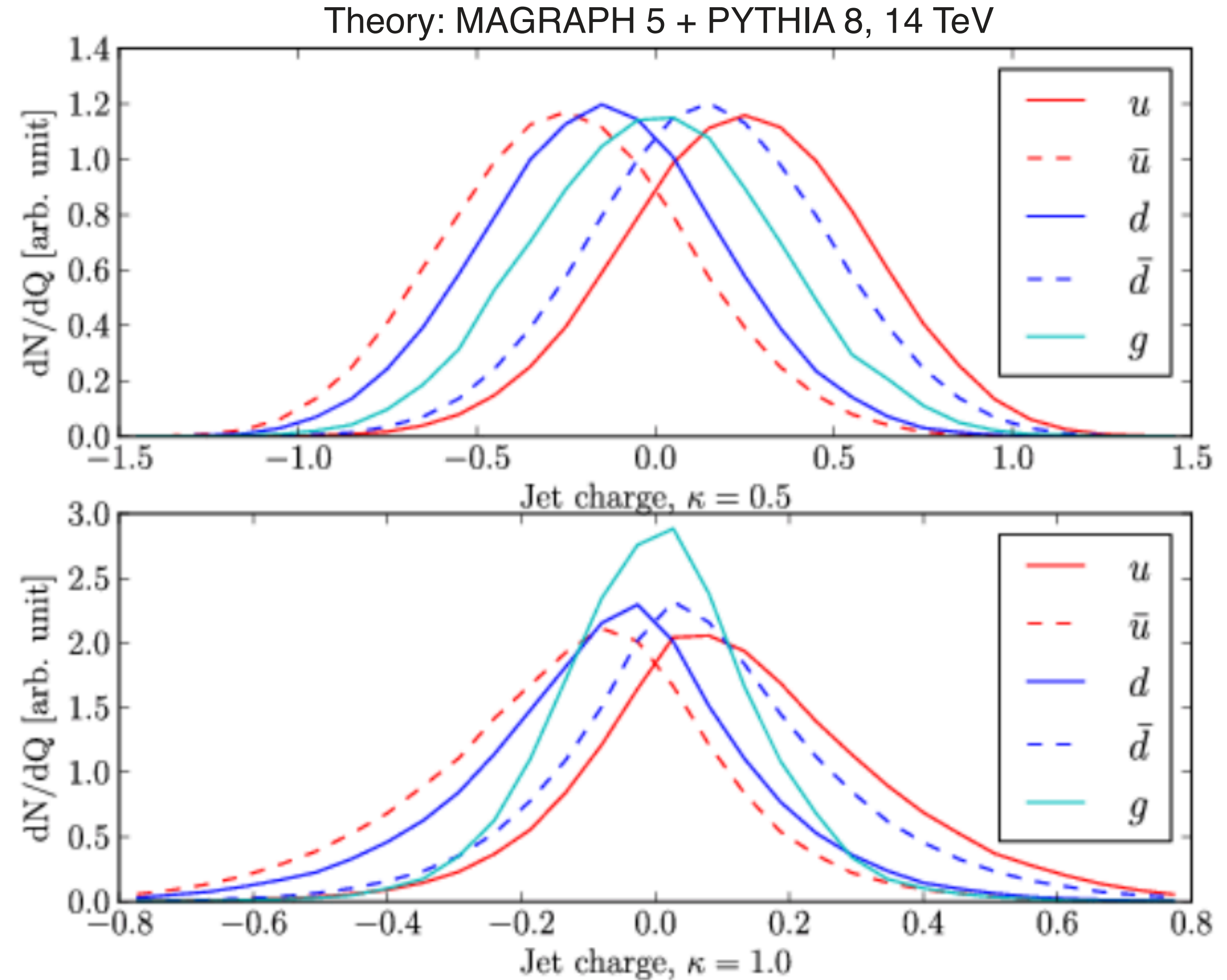
- 2012 pp data at STAR
- $\sqrt{s} = 200$ GeV
- Jet patch trigger in $\eta - \phi$
- anti- k_T jets with $R = 0.4$
- Charged and neutral particles clustered into jets
- Full hadronic correction

<https://doi.org/10.1016/j.physletb.2020.135846>

<https://doi.org/10.48550/arXiv.2009.04962>

Weighted Jet Charge

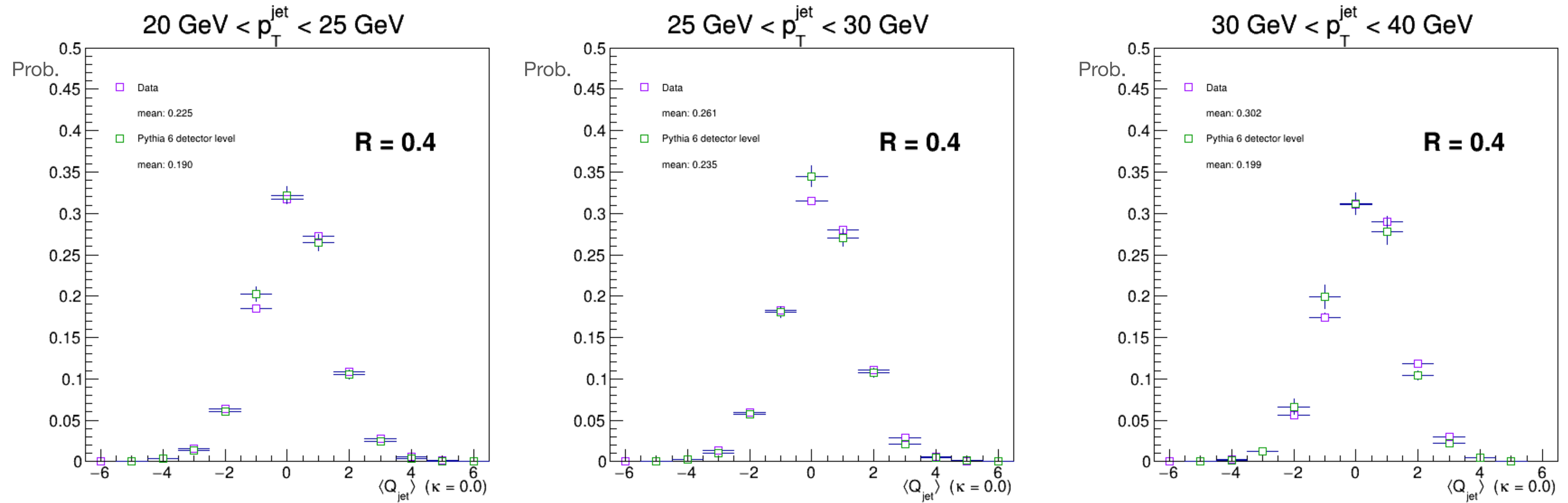
- $$Q_\kappa = \frac{1}{\left(p_T^{\text{jet}}\right)^\kappa} \sum_{j \in \text{jet}} Q_j \left(p_T^j\right)^\kappa$$
- Choice of κ
 - Shown: $\kappa = 0.0$
 - in progress: $\kappa = 0.3, 0.5, 0.7$
- Determine the flavor of the initiating parton of a jet



<https://arxiv.org/pdf/1209.2421.pdf>

Raw Data

$$\kappa = 0.0$$



Statistical errors are smaller than the marker, currently working to confirm that these are propagated properly

Systematics

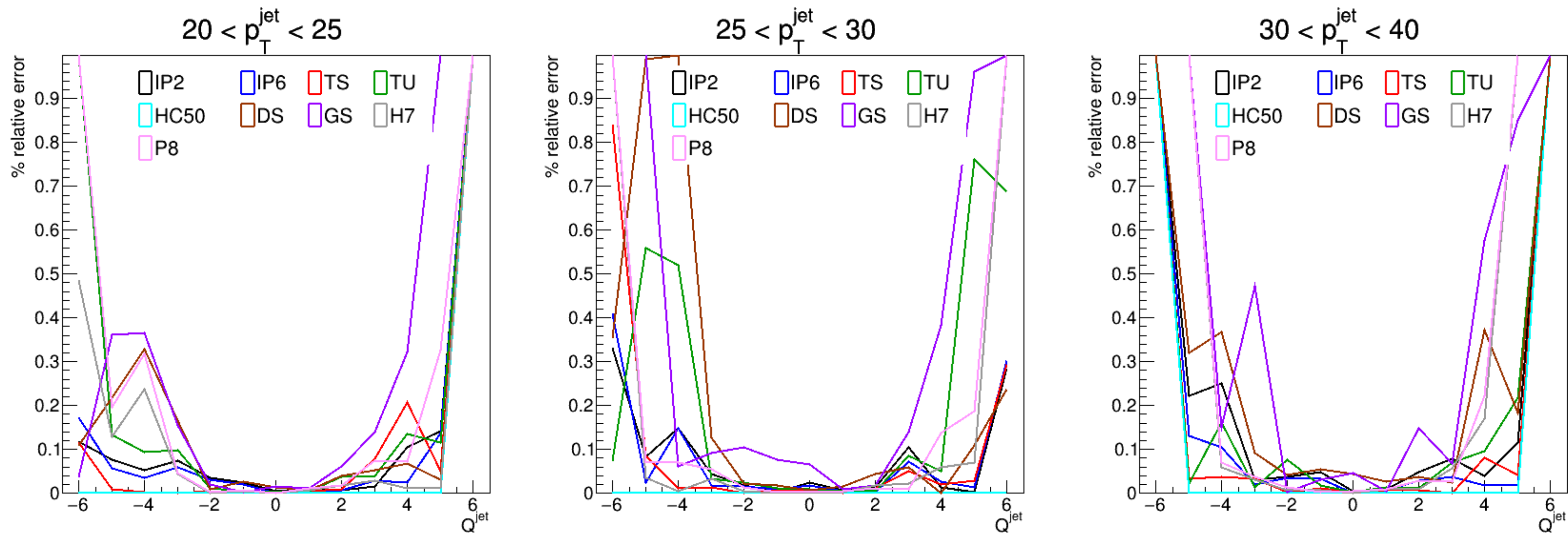
- IP2(6): Variation of the unfolding number of iterations: nominal = 4, varied to 2 and 6
- TS: Increase tower energy scale by 3.8%
- TU: Decrease the tracking efficiency by 4%
- HC50: Change hadronic correction from 100% to 50%
- D(G)S: Gaussian smearing of the jet pt spectrum on detector- and generator-level
- P8(H7): Smear the jet charge prior shape using PYTHIA-8 and HERWIG-7

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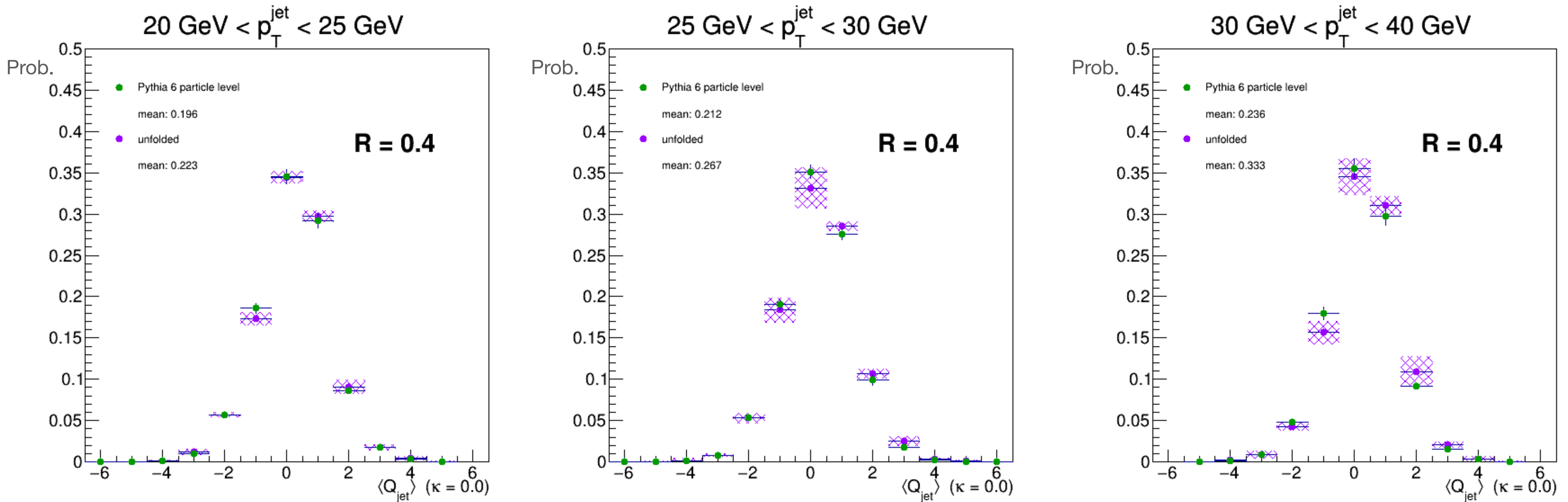
Systematic Uncertainties

$$\kappa = 0.0$$



Fully Corrected with Systematics

$$\kappa = 0.0$$



Statistical errors are not propagated properly, currently looking into this

Outlook

- Repeat study for other values of $\kappa = 0.3, 0.5, 0.7$
- Look into systematic error smoothing
- Template fits to extract initiating parton information

Fully Corrected with Systematics

$$\kappa = 0.0$$

