y_{23} jet rates at NLL with the PanScales showers

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Context

Queston addressed

Is the PanLocal($\beta = 1/2$) shower NLL accurate for the y_{23} jet rates?

2 cases studied:

- Cambridge y_{23} ([arXiv:2002.11114])
- k_t y_{23} (NEW)

Same resummation:

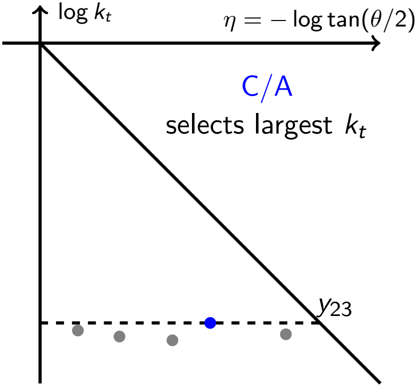
$$\log \Sigma(\lambda) = g_1(\lambda) L + g_2(\lambda)$$

$\lambda = \alpha_s \log(\sqrt{y_{23}})$ except for the multiple-emission contribution to g_2

$$\mathcal{F}_{CA} = 1$$

$$\mathcal{F}_{kt} = \text{numerics in hep-ph/0112156}$$

Idea: study $\frac{\Sigma_{kt}}{\Sigma_{CA}}$ and see if we get $\mathcal{F}_{kt}$



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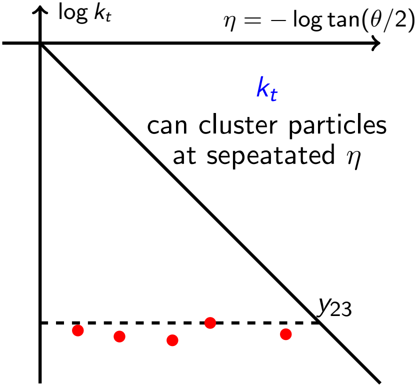
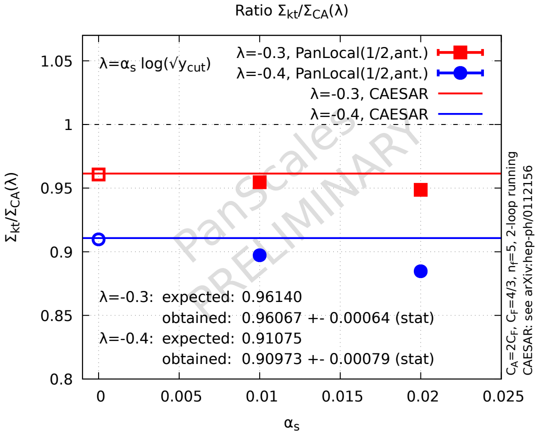


Results



Take-home message

PanLocal($\beta = \frac{1}{2}$) is NLL-accurate (as expected)

A few minor comments:

- k_t clustering numerically challenging for $\alpha_s \to 0$, λ fixed
- ideally want larger stats, sytematic uncertainties and $\alpha_s = 0.005$ point
- Can we study higher rates? e.g. y_{34}, ...