Weight files of flavour tagging for new 250GeV samples

R. Yonamine

ILD sw/ana meeting, 4th Nov. 2020

Some remarks

❖ **Training with 2 jet sample(vvH,H->qq/gg at 250GeV)**

Note that this data set includes gg as well as qq.

https://ild.ngt.ndu.ac.jp/elog/dbd-prod/333

❖ **Training with 4 jet sample(ZZ->qqqq at 250GeV)**

https://ild.ngt.ndu.ac.jp/elog/dbd-prod/334

❖ **You can access the produced weight files via following repository:**

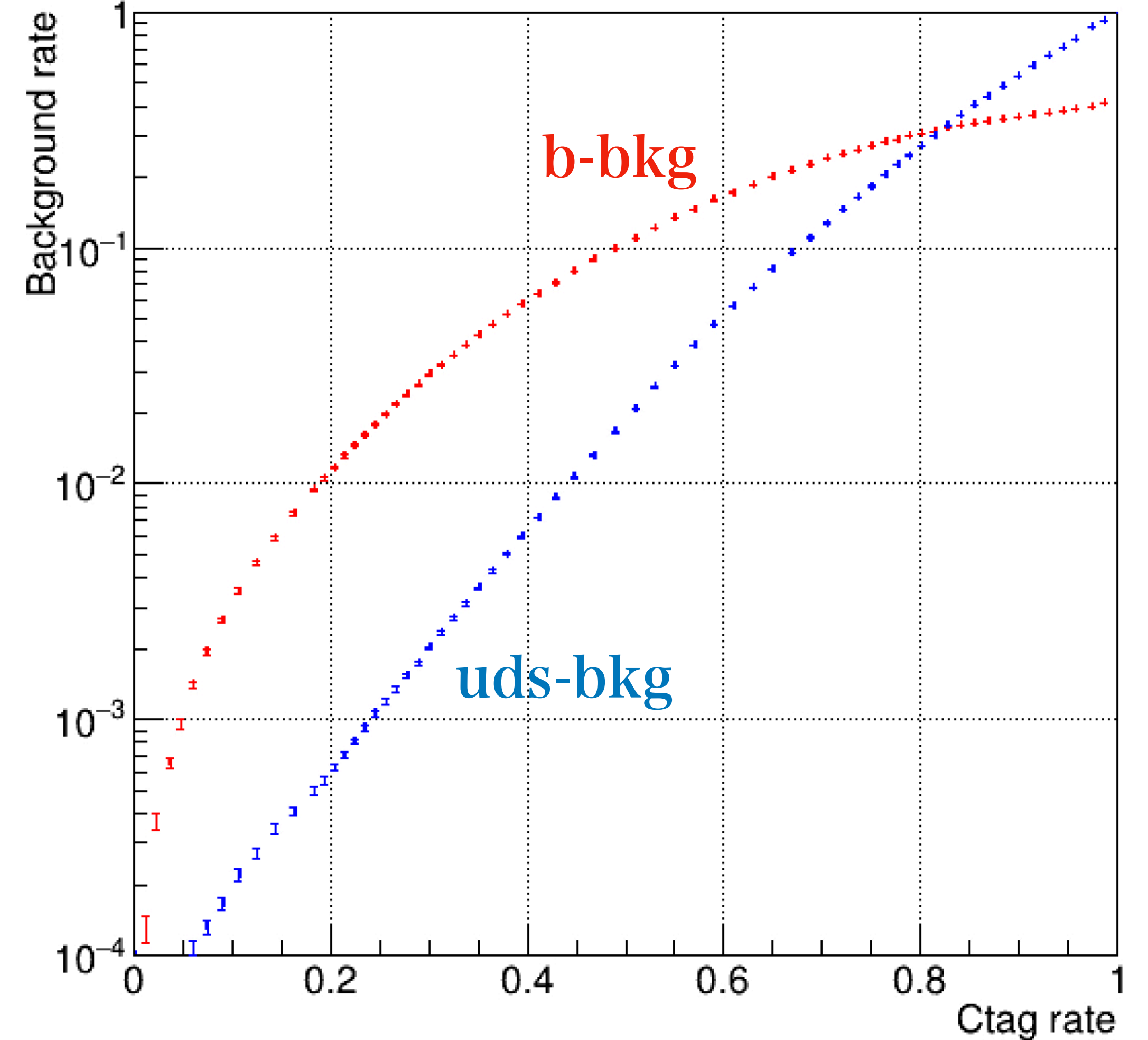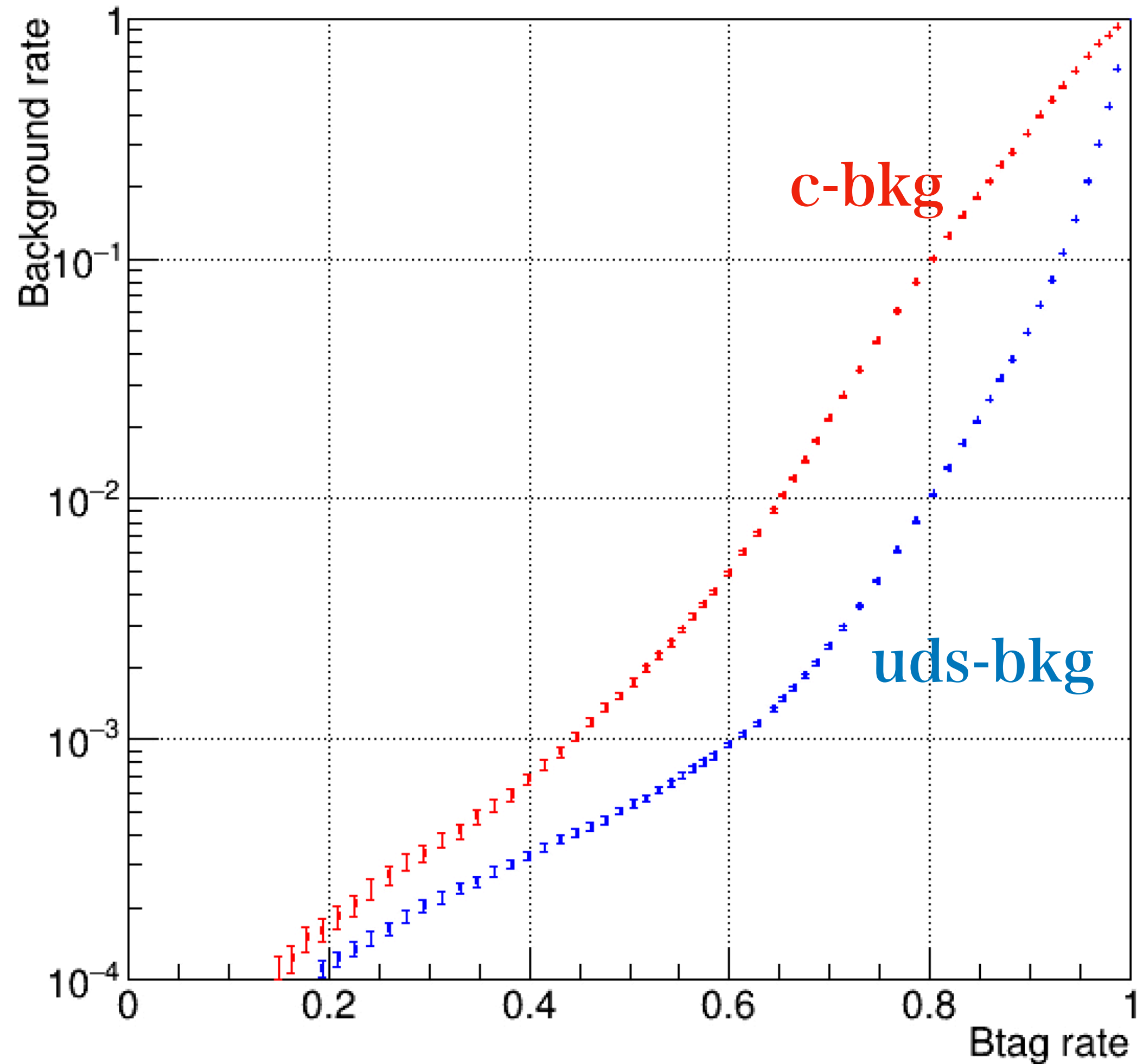https://github.com/ryonamin/ILDConfig/tree/dev20201102

Your feedbacks are highly welcome!
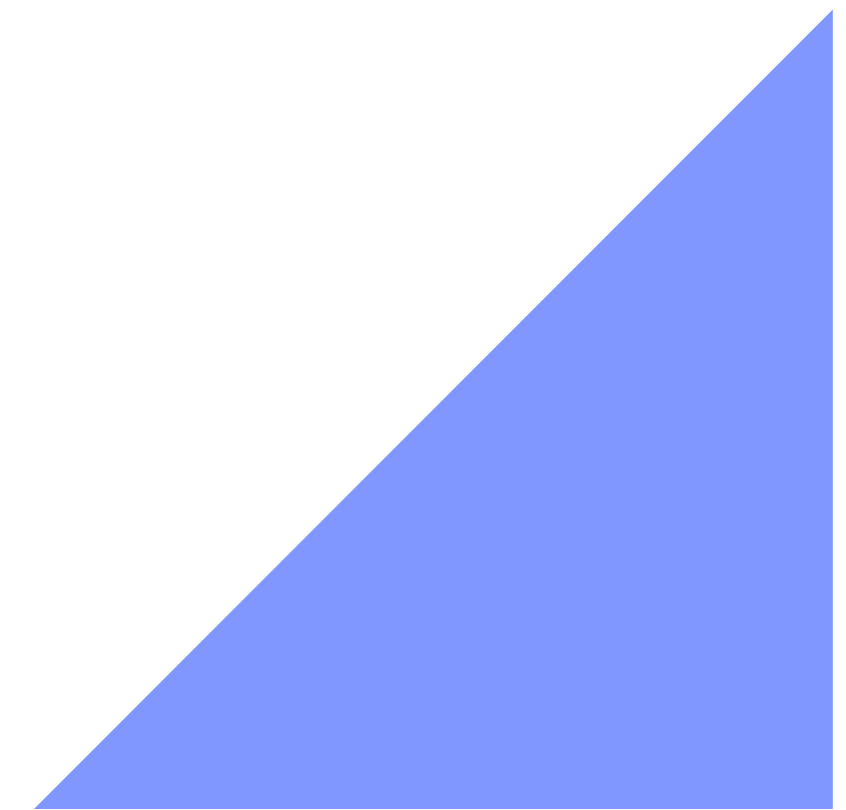
Training with 4-jet sample
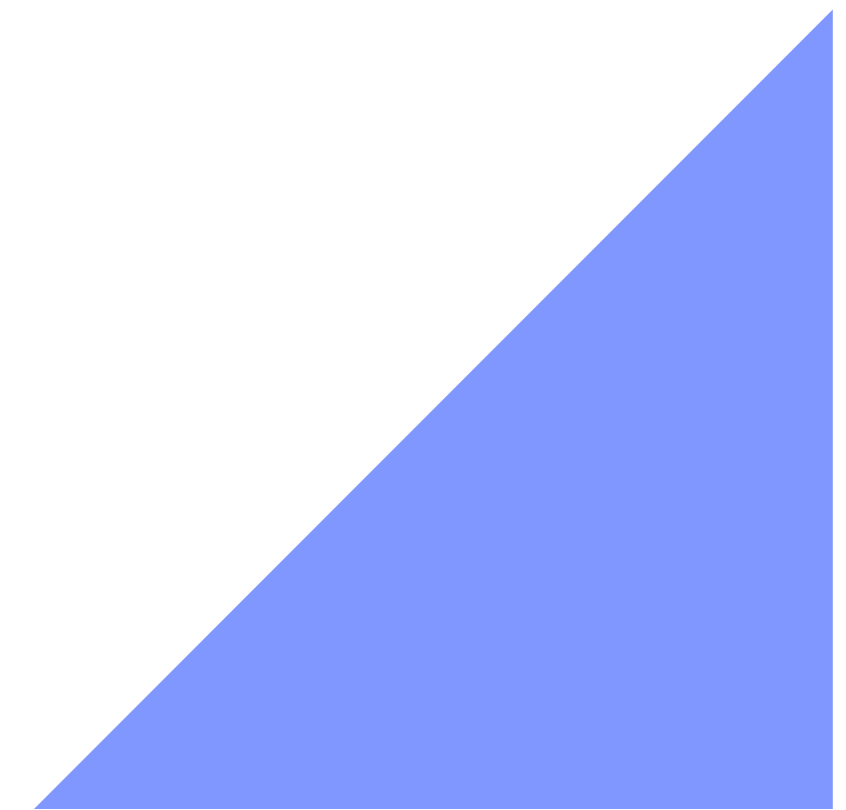
Flavour tag performance (4-jet(ZZ) sample)

Similar results to previous (IDR) ones

Training with 2-jet sample

Real B,C-hadrons in background samples (vvqq, vvgg)

(Rough estimation for gluon background)

MC decay chain was checked
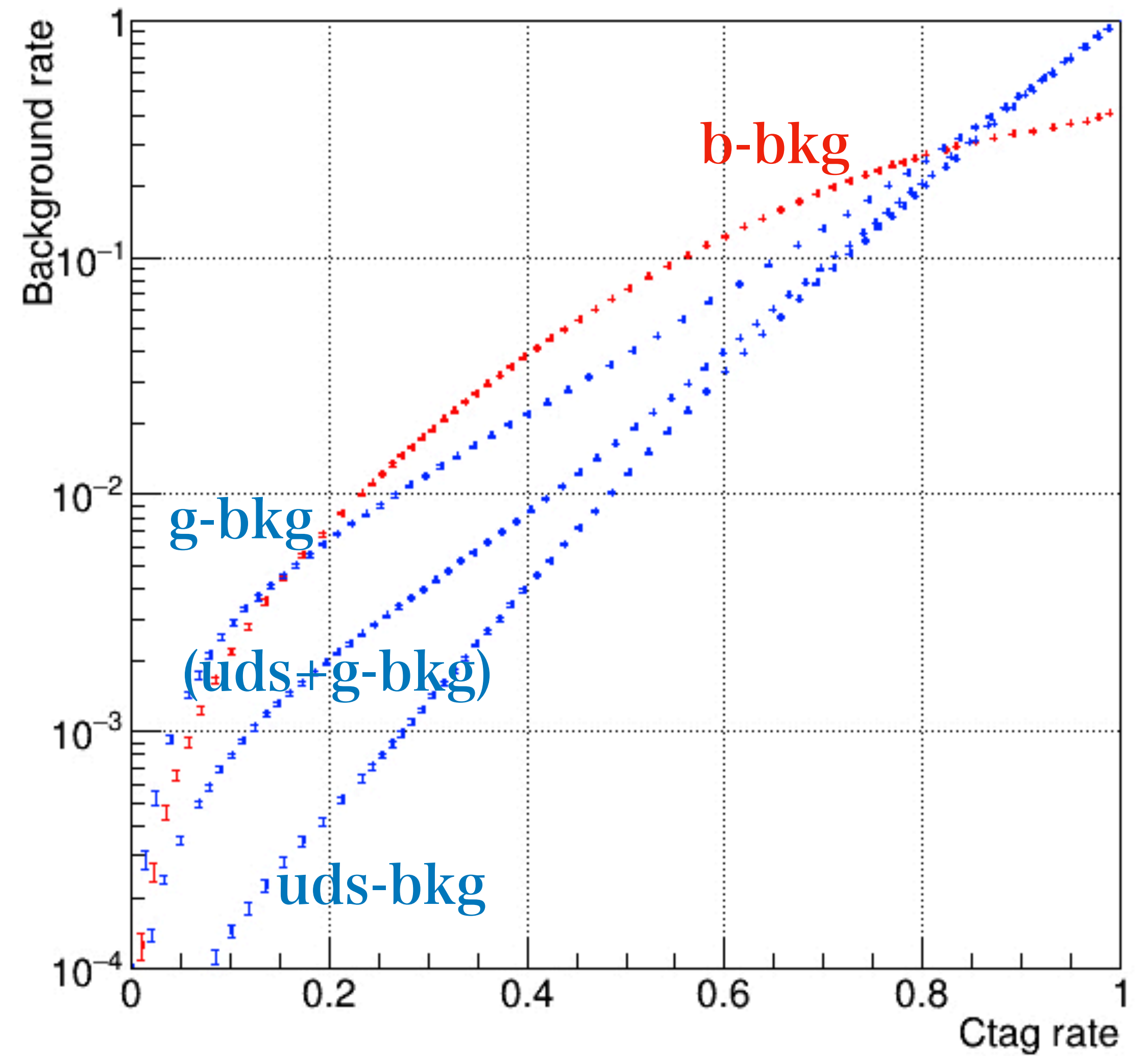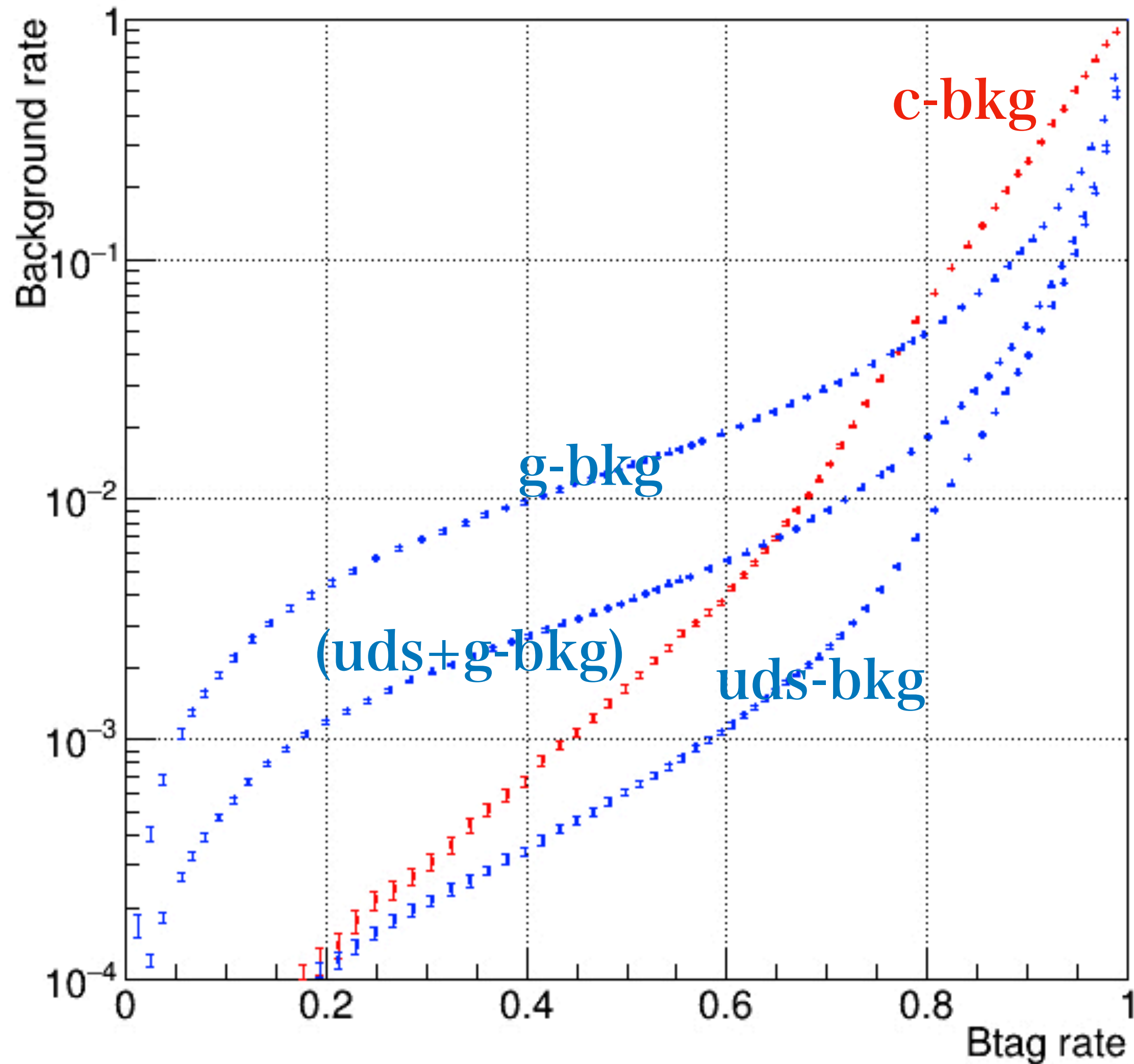
vvqq (q=u,d,s) : 153403 events (subset)

vvgg : 37000 events (subset)

	vvqq	vvgg
# of B hadrons	$\times 20$ 0.1% of q-jets (=nevts*2) (379 evt)	2% of g-jets (=nevts*2) (1592 evt)
# of C hadrons	$\times 10$ 0.6% of q-jets (=nevts*2) (1752 evt)	6% of g-jets (=nevts*2) (4410 evt)

g-bkg can lead to ~20 times worse performance than q-bkg for b-tag,
g-bkg can lead to ~10 times worse performance than q-bkg for c-tag
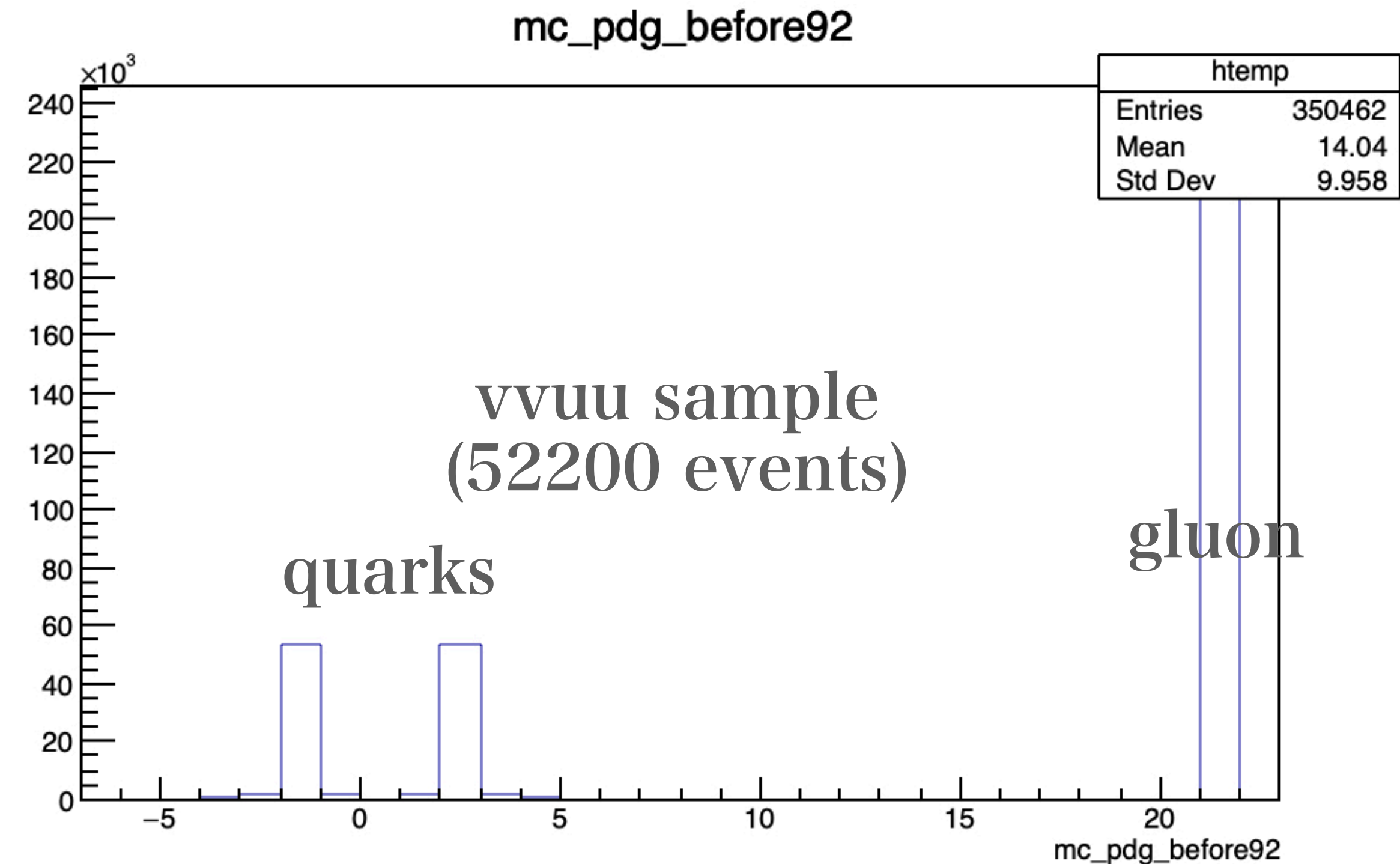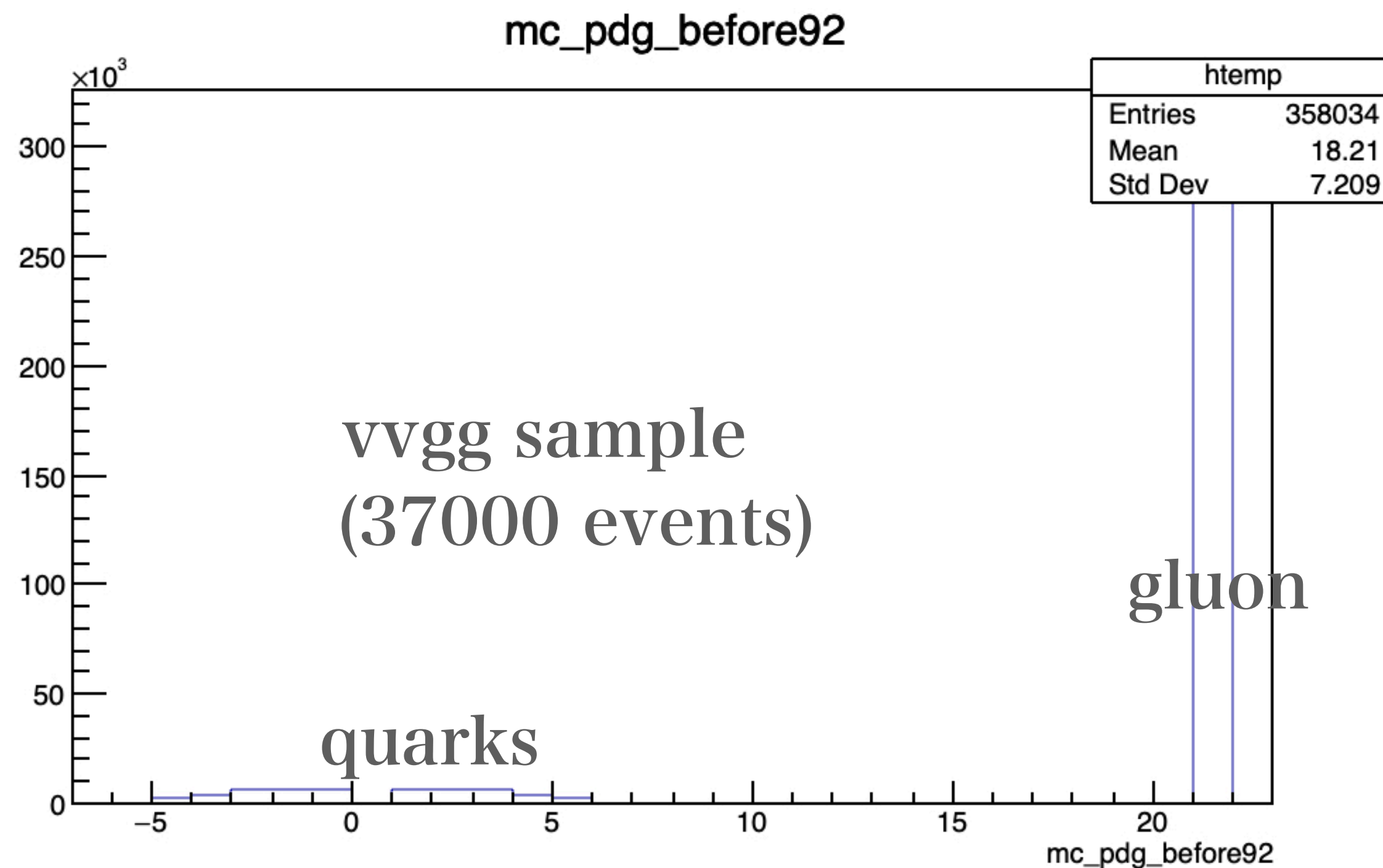
Flavour tag performance (2-jet(vvH) sample)

g-bkg is also understandable considering existence of real B,C-hadrons

Extra

❖ **Junping pointed out that it would be interesting to study the difference b/w q-jet and g-jet using the flavour samples.**

We checked pid of partons before fragmentation.

He quickly made gen-level analysis for better understanding (See another attachment).

Summary

- Produced weight files of flavour tagging for new 250 GeV samples

https://github.com/ryonamin/ILDConfig/tree/dev20201102

- No clear problems found

- Your feedbacks are highly welcome.

Backup

Flavour tag performance (previous (6-jet, 500GeV))