b-taggers Retraining Results Report

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Collider Physics Group Meeting

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OVERVIEW

- **Re-trained taggers validation**

DERIVATION PRODUCTION

FTAG1 test derivation production including 201810 and 201903 PFlow shallow copies:

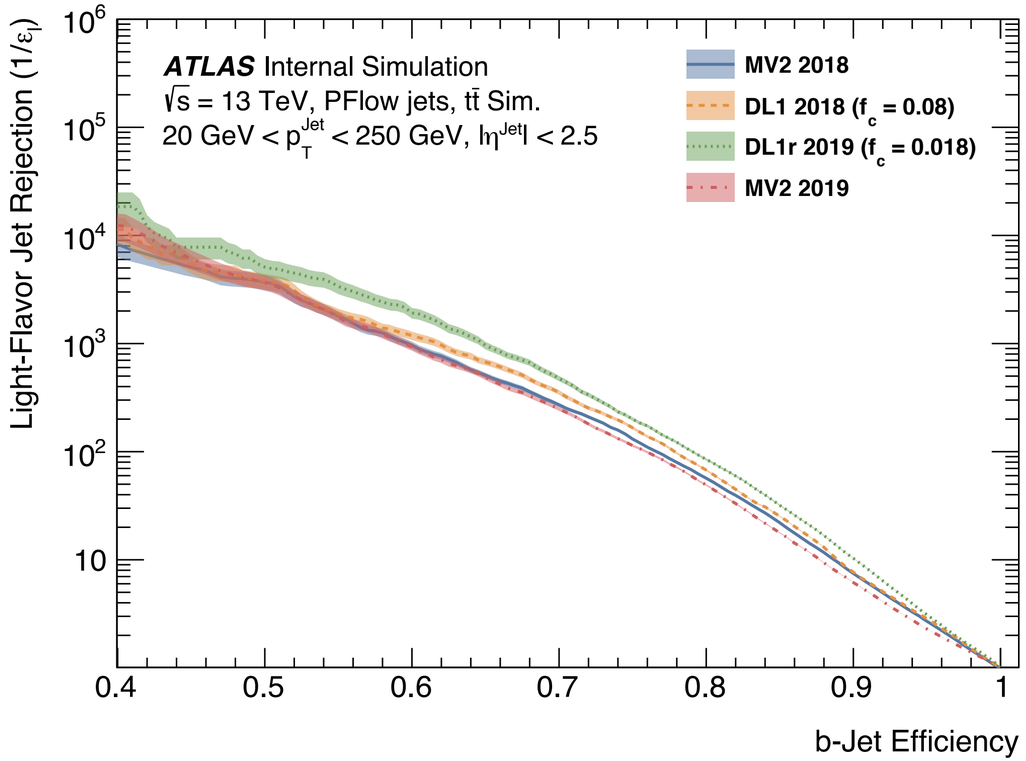
- **Samples requested using latest CDI(BTagCalibRUN12Onl-08-49):**

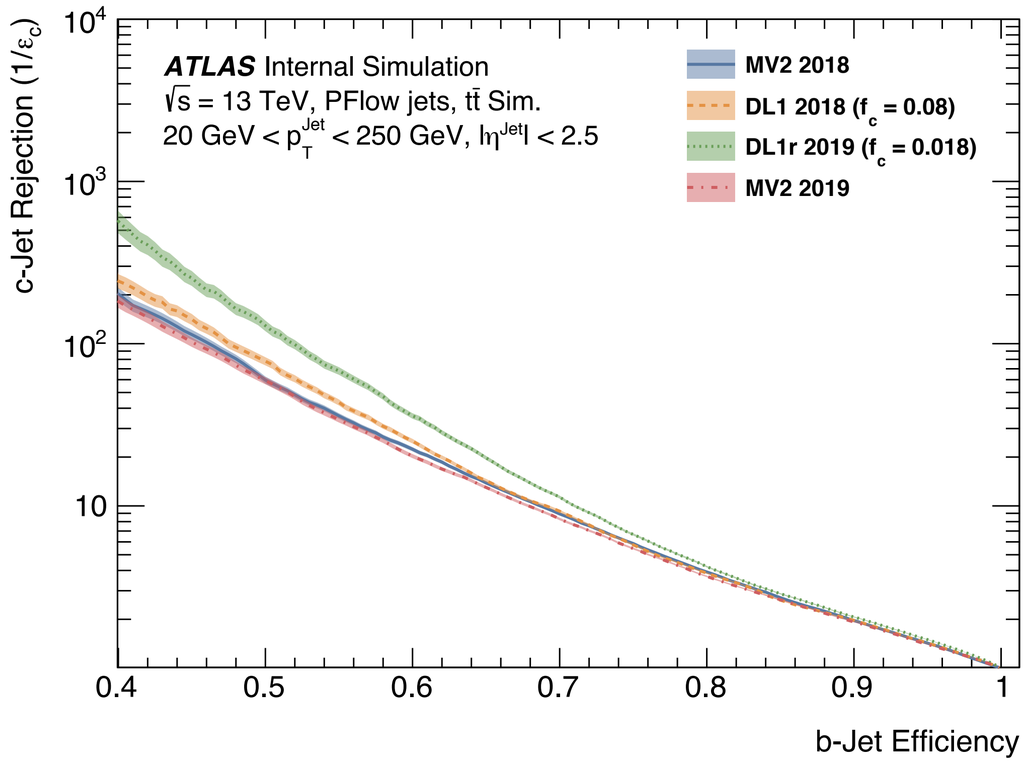
valid1.410470.PhPy8EG_A14_ttbar_hdamp258p75_nonallhad.deriv.DAOD_FTAG1.e6337_e5984_s3126_r10201_r10210_p3911

valid1.426345.Pythia8EvtGen_A14NNPDF23LO_Zprime_tt_flatpT.deriv.DAOD_FTAG1.e6880_e5984_s3126_r10201_r10210_p3911

- **201810: all taggers available**
- **201903: MV2, DL1r**
- **test derivations with DL1 and DL1rmu are being prepared right now**

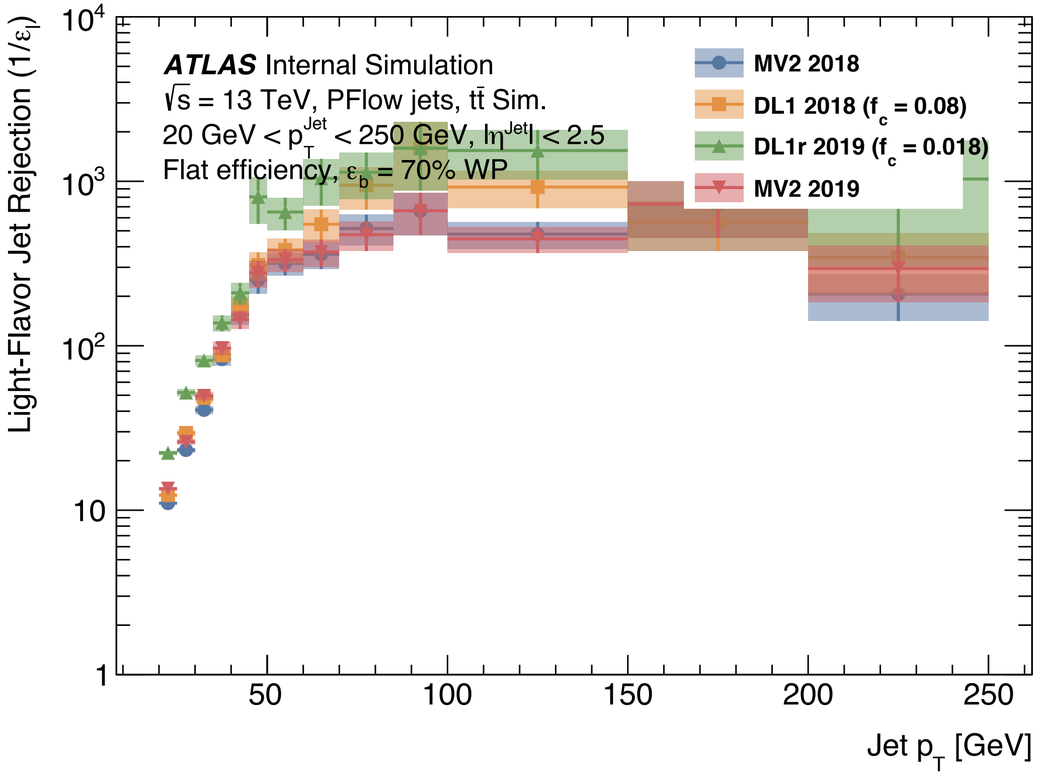
LOW PT – Recommendations Comparison

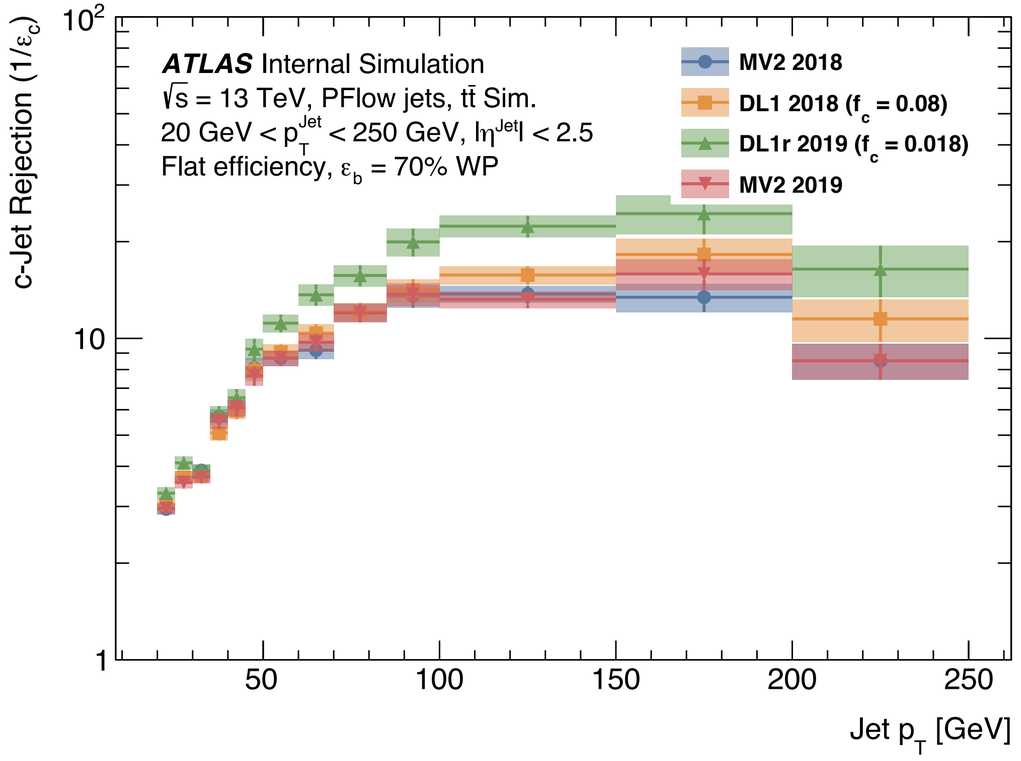




- MV2: 2018 performance slightly better.
- New DL1r performance is better overall!

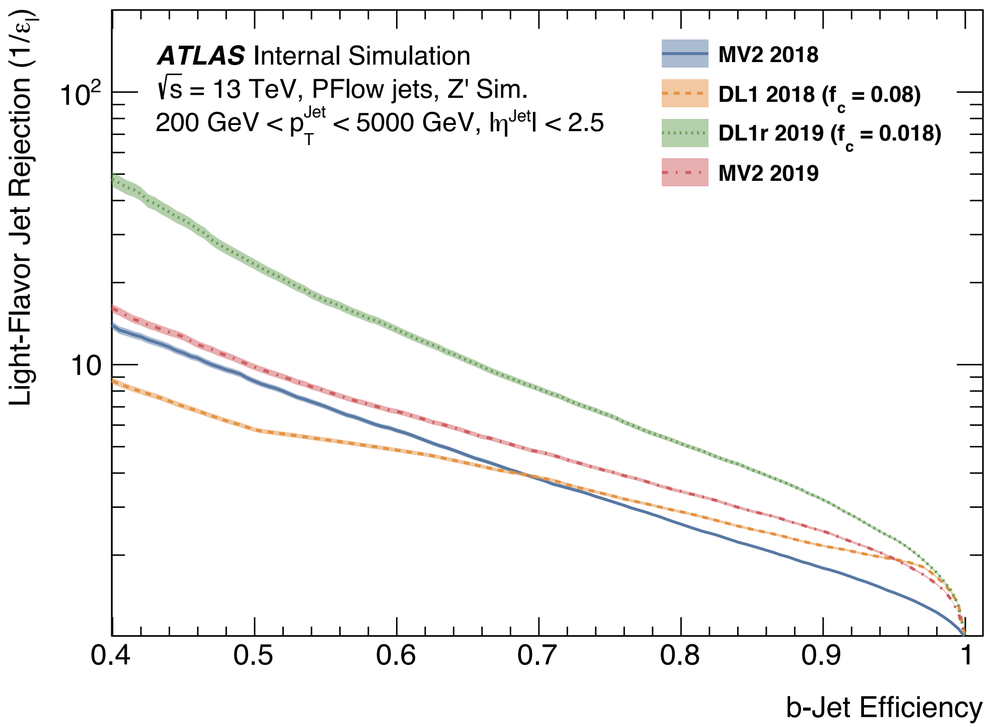
LOW PT – Recommendations Comparison

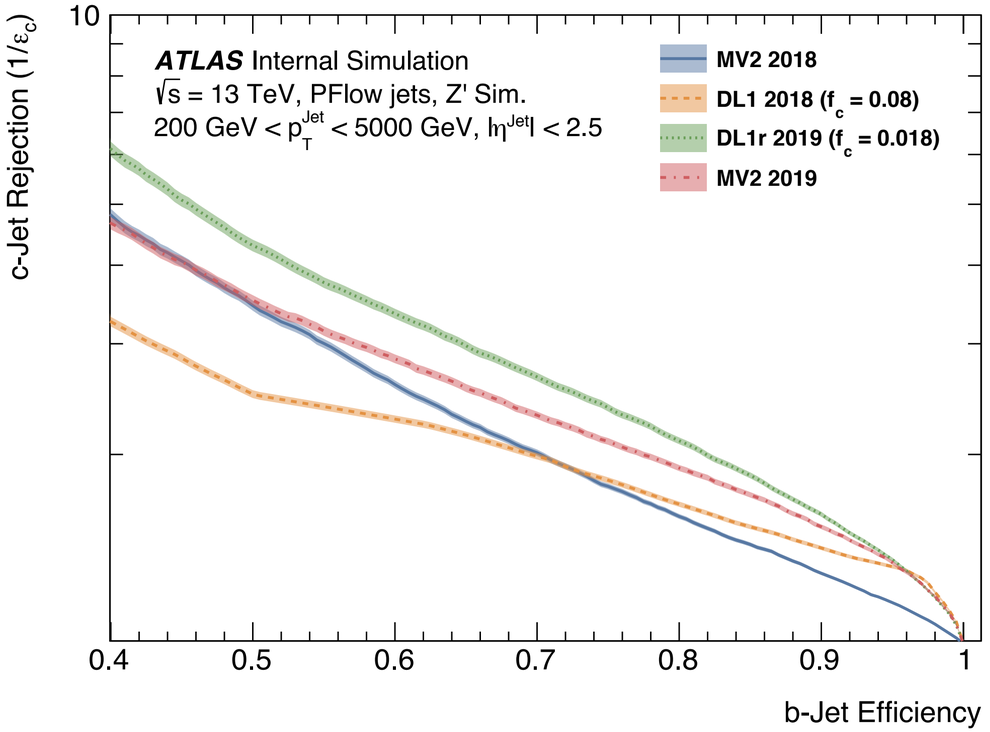




- **New DL1r performance better, especially for c-jet rejection!**

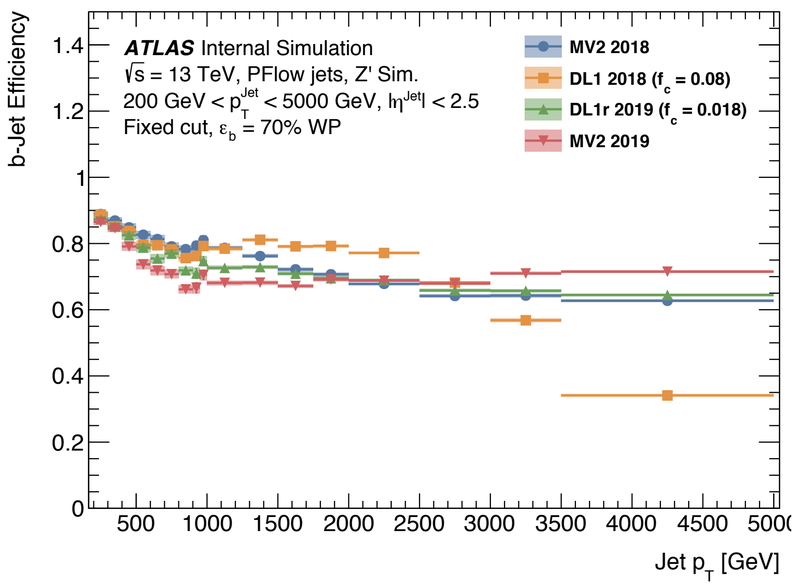
HIGH PT – Recommendations Comparison

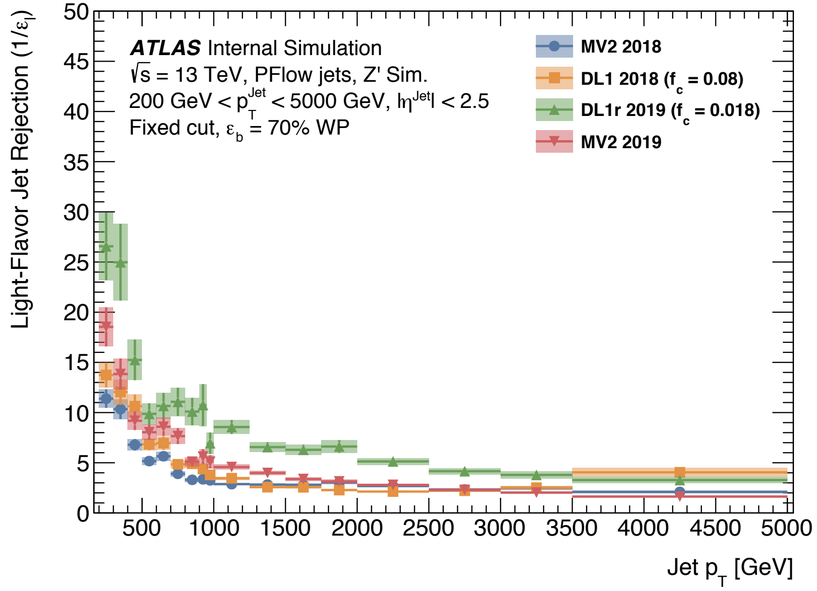


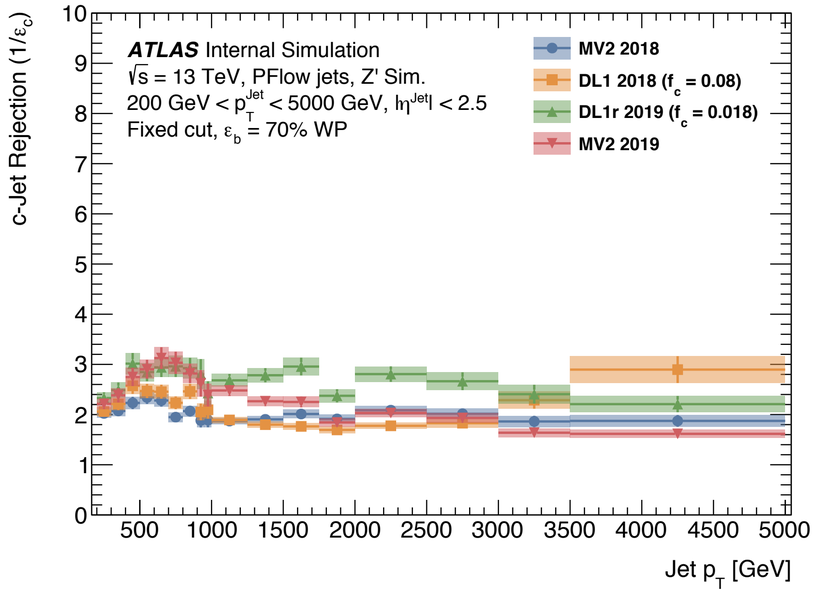


- Both 2019 taggers performance better than 2018 recommendation.
- New DL1r outperforms everywhere!

HIGH PT – Recommendations Comparison







- c-jet rejection & light-jet rejection:
  - MV2 improves mainly at pT [200, 2000] GeV range
  - DL1r outperform the whole range
  - RNNIP is now very powerful at high pt — trained on extended hybrid and optimized to maximize performance both on ttbar and extended Zprime

SUMMARY

- **Retraining results:**
  - **New MV2 performs better than 2018 recommendation at high pT range.**
  - **New DL1r outperforms all other taggers everywhere.**

Back-up