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## The Heavy Flavor Production Fraction Reweighting Procedure in ATLAS

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The rates at which b- and c-quarks hadronize into different hadron species (i.e. the HF production fractions) may vary among MC Shower simulations such as Pythia, Sherpa, and Herwig. Furthermore, the flavor tagging efficiencies in ATLAS have been found to depend on the hadron species inside a jet. For example, flavor tagging efficiency for c-jets is the largest for D+ mesons and the lowest for charm baryons. Because of this, flavor tagging efficiency in MC depends on the MC shower software and needs to be corrected on an individual basis. The ATLAS Collaboration developed a method of reweighting the HF production fractions to a common world average, which largely eliminates the difference in the flavor tagging efficiency between different MC samples. Moreover, the experimental uncertainties in the HF production fractions (typically 2-3% relative uncertainty) can also be applied with the same reweighting procedure which gives rise to a common way of estimating these systematic uncertainties in ATLAS.

### In-person participation

Yes

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