Contribution ID: **10** Type: **not specified**

First evaluation of the jet energy resolution using pileup events with the ATLAS detector

For the first time, the R=0.4 jet energy resolution (JER) is evaluated using a dataset reconstructed from pileup events with the ATLAS detector. Traditionally, JER evaluated using the pT imbalance of dijet events is limited by the available statistics at low pT due to the increasingly prescaled jet triggers. An alternative approach is to utilize pileup events, which are recorded at the same time with otherwise-triggered events. This provides a much larger statistics at low pT compared to the traditional approach, and thus allows higher precision for the determination of the low pT R=0.4 JER. The pileup JER results presented now, are using the full 2017 and 2018 proton-proton collision dataset. A comparison is made to official ATLAS JER measurement from 2017 and the benefits of the pileup approach are discussed.

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