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Measurements of jet energy correlations and jet fragmentation, including heavy flavour, using the ATLAS detector

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In this talk, we present measurements of jet energy-energy correlations and jet fragmentation properties using data collected by the ATLAS experiment at $\sqrt{s}$ = 13 TeV. Measurements of transverse energy-energy correlations and their associated azimuthal asymmetries in multi-jet events are compared to next-to-leading-order perturbative QCD calculations and provide a precision test of QCD at large momentum transfers. The strong coupling constant is extracted from these data at different scale regimes. For jet fragmentation, if available, we present a measurement of the fragmentation properties of b-quark initiated jets, studied using charged B mesons. This analysis provides key measurements with which to better understand the fragmentation functions of heavy quarks. Both results are corrected for detector effects and compared to several Monte Carlo predictions with different parton shower and hadronisation models.

Recent results from the ATLAS experiment on charmonium production will be presented with emphasis on the boosted signatures. The measurement of the associated production of the J/psi meson and a gauge boson, including the separation of single and double parton scattering components will be discussed. The measurements of J/psi and psi(2S) differential cross sections at large transverse momentum values will also be reported.

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