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LO and NLO Calculations of Heavy Flavour Electron Correlations in Small Systems

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Heavy flavour quarks (charm and beauty) are of special interest for the study of the Quark-Gluon Plasma as they are predominantly produced in the initial hard-scattering processes and participate in the entire evolution of the system. Moreover, heavy flavour production is well under control of perturbative QCD. Thus, heavy flavours are an excellent probe to study pQCD in small systems as well as parton in medium energy loss and transport mechanisms in nuclear collisions by measuring, for instance, the spectra, angular correlations or the nuclear modification factor R_{AA} .

Experimentally, heavy flavours are often investigated using measurements of electrons from heavy-flavour hadron decays. These electrons can be separated statistically from the background and their angular correlations with other heavy flavour electrons or with charged particles can be studied.

In this poster, we present theoretical predictions for the spectrum and angular correlations of heavy flavour electrons in pp collisions at $\sqrt{s} = 13$ TeV obtained at LO and NLO accuracy using PYTHIA and POWHEG, respectively. The correlations can be utilized to separate charm and beauty contributions and provide insights into different heavy-flavour production mechanisms. – Supported by DFG GRK2149.

Content type

Theory

Collaboration

Centralised submission by Collaboration

Presenter name already specified

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