

Azimuthal angular correlations between D^* mesons and charged hadrons in 7 TeV proton-proton collisions in ALICE

As a consequence of their relatively high mass, heavy-flavour quarks, produced in heavy-ion collisions, are sensitive probes of the interaction dynamics inside the hot and dense QCD matter.

Since heavy quarks are produced in pairs during the initial stage of the collision, before the formation of the QCD medium, the measurement of heavy-flavour hadron production provides sensitive information on the properties of the medium itself.

A detailed understanding of the pair production mechanism in proton-proton collisions is interesting both as a QCD test tool and as a reference for future heavy-ion studies.

This particular physical process can be investigated using the angular azimuthal correlation between a reconstructed open-charm meson and the charged hadrons (or the kaons) produced in the collision. The azimuthal direction of charged hadrons (kaons) coming from a heavy-flavour decay, in respect to the $D^{*\pm}$, the “trigger” particle, is expected to be sensitive to the heavy quark production mechanism and can be compared to the perturbative QCD calculations.

The sample of reconstructed $D^{*\pm}$ mesons is highly pure because of its low background level. This feature makes them well suited candidates for correlation studies.

The status of the analysis, performed over the minimum bias proton-proton $\sqrt{s} = 7$ TeV data sample collected by the ALICE experiment in 2010, is presented.

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