

# Quark Matter 2019 - the XXVIIIth International Conference on Ultra-relativistic Nucleus-Nucleus Collisions



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## **D<sup>+</sup> meson production in pp, p–pb and Pb–Pb collisions at $\sqrt{s}= 5$ TeV with ALICE**

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Heavy quarks (charm and beauty) are effective probes to investigate the properties of the hot and dense strongly-interacting medium created in heavy-ion collisions as they are produced in high-energy hard partonic scattering processes occurring in the early stages of the collision. Due to their long life time, they probe all the stages of the medium evolution interacting with its constituents and losing energy via gluon radiation and elastic collisions. In pp collisions, heavy quarks serve as a fundamental test of perturbative QCD calculations and also provide reference for measurements in p–Pb and Pb–Pb collisions. Pb–Pb collisions give the possibility of studying the properties of strongly-interacting matter at high temperature and density, while p–Pb collisions allow us to disentangle cold nuclear effects (such as kT broadening, nuclear modification of parton distribution functions, parton saturation at small Bjorken-x etc.) and to study the origin of the collective-like effects evidenced in high-multiplicity pp and p–Pb collisions.

The ALICE apparatus has excellent capabilities for heavy-flavour measurements in all the collision systems. Open heavy-flavour production is measured at mid-rapidity via the hadronic decays of D mesons (D0, D<sup>+</sup>, D<sup>\*+</sup> and Ds<sup>+</sup>) and  $\Lambda_c^+$ , the semileptonic decays to electrons of charm and beauty hadrons and also semileptonic decays to electrons of  $\Lambda_c^+$  and  $\Xi_c^0$ .

In this contribution, the measurement of D<sup>+</sup> meson production in pp, p–Pb and Pb–Pb collisions will be presented. The results will also be compared with various theoretical models

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