



# XXIV QUARK MATTER DARMSTADT 2014

Contribution ID: 123

Type: **Contributed Talk**

## Measurements of the heavy-flavour nuclear modification factor in p-Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV with ALICE at the LHC

*Monday, 19 May 2014 15:00 (20 minutes)*

The LHC heavy-ion physics program aims at investigating the properties of strongly interacting matter at extreme conditions of temperature and energy density, where the formation of the Quark-Gluon Plasma (QGP) is expected.

In high-energy heavy-ion collisions, heavy quarks are regarded as effective probes of the properties of the QGP as they are created on a short time scale, with respect to that of the QGP, and subsequently interact with it.

The nuclear modification factor  $R_{AA}$ , defined as the ratio of the yield measured in

Pb-Pb to that observed in pp collisions scaled with the number of binary nucleon-nucleon collisions, is used to study the mechanisms of heavy quark in-medium energy loss and hadronization.

In order to disentangle hot and cold nuclear matter effects, the nuclear modification factor was measured in p-Pb collisions where the formation of a large volume hot and dense medium is not expected.

Heavy-flavour production in p-Pb collisions has also its own interest since it allows us to investigate initial state effects such as modifications of the parton distribution functions in the nucleus, gluon saturation and  $k_T$  broadening.

With ALICE, the detector designed and optimized for heavy-ion physics at the LHC, open heavy flavours are measured at central rapidity using their hadronic and semi-electronic decays as well as at forward and backward rapidity using their semi-muonic decays. The latest results on the nuclear modification factor of charmed mesons and electrons and muons from heavy-flavour hadron decays in p-Pb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV will be presented.

Comparisons with theoretical predictions will be discussed.

### On behalf of collaboration:

ALICE

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**Session Classification:** Heavy flavor

**Track Classification:** Open Heavy Flavour and Quarkonia