

10th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions



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DCA studies for separating prompt and non-prompt dielectrons in p–Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV with ALICE

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Dileptons are a prime probe of the deconfined state of strongly interacting matter, the Quark–Gluon Plasma (QGP), produced in high energy heavy ion collisions, as they are not affected by secondary strong interactions. A measurement of the thermal radiation from the QGP in the dielectron intermediate mass region allows to estimate the medium temperature. In this region the main component of the dielectron continuum is due to correlated semileptonic decays of B and D mesons. The proper decay length for B-mesons is $c\tau \approx 500 \mu\text{m}$ and for D mesons it is $100\text{--}300 \mu\text{m}$, hence the reconstructed decay electrons do not point to the primary vertex of the collision.

Combining the measured distance of closest approach (DCA) of each single electron into a pair variable DCA_{ee} gives the possibility to separate prompt from non-prompt dielectron pairs or the charm and beauty contributions from each other. In small collision systems this approach can be used to measure a possible modification of the heavy-flavour sources by cold nuclear matter effects, or to identify thermal radiation on top of the heavy-flavour contributions and with this serve as a reference for measurements in Pb–Pb collisions.

We will present most recent studies in p–Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV.

Collaboration (if applicable)

ALICE

Track

Electroweak Probes

Contribution type

Poster

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