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A New Horizon - Dielectron measurements with ALICE 3

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Electromagnetic radiation is emitted throughout the whole evolution of high-energy heavy-ion collisions. Due to their penetrating nature, real and virtual photons reach the detector unimpeded. Their measurement makes it possible to shed light on the different stages of the extreme states of matter created in such collisions.

In this poster, we will discuss dielectron measurements that will only be possible with a new generation's experiment at the LHC and the features of the ALICE 3 detector that will enable them. In particular, the rejection of dielectrons from correlated semi-leptonic decays of heavy-flavour hadrons will be evaluated. We will present the expected performance of differential measurements of the thermal emission of dielectrons and the derived early-time temperature of the medium. The unique possibility to probe the pre-hydrodynamic phase of the medium with e^+e^- pairs will be discussed. In addition, the capability for detailed studies of chiral symmetry restoration mechanisms with a precise measurement of the rho spectral function will be addressed.

Category

Experiment

Collaboration (if applicable)

ALICE

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