

## Contribution submission to the conference SMuK 2021

**Dielectron physics opportunities with ALICE 3** — •FLORIAN EISENHUT for the ALICE-Collaboration — IKF, Universität Frankfurt am Main, Deutschland

The ALICE 3 experiment is planned as a compact, next-generation multipurpose detector at the LHC as a follow-up to the present ALICE experiment. It will provide unprecedented tracking and vertexing capabilities down to a few tens of MeV/ $c$  in pp, pA and AA collisions at luminosities up to a factor 50 times higher than what will be possible with the upgraded ALICE detector. Such detector performances allow to study the very soft dielectron productions connected to the electric conductivity of the medium via thermal dielectrons in heavy-ion (AA) collisions. At higher dielectron invariant masses ( $m_{ee}$ ), the measurement of thermal radiation from the hadron gas is possible, which becomes sensitive to the chiral symmetry mixing between  $\rho$  and  $a_1$  mesons. Overall, these conditions will provide unique opportunities for dielectron measurements.

This talk will give an overview of the performance studies for dielectron analyses with the ALICE 3 experiment aiming at specific criteria to optimise the layout of the detector. A possible way to identify electrons using different PID scenarios will be presented together with the resulting track and pair efficiencies and the expected  $m_{ee}$  resolution. Finally the capability to reject the heavy-flavour background will be discussed based on the expected raw dielectron yield in central AA collisions as a function of the pair distance-of-closest approach to the primary vertex.

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