

Contribution submission to the conference SMuK 2021

Using CMOS technologies in ALICE for high luminosity experiments — ●ABHISHEK NATH for the ALICE-Collaboration — Physikalisches Institut, Ruprecht Karl University of Heidelberg, Germany

The LHC may extend the heavy-ion program to Run 5 (2033) using lighter ions to achieve a large luminosity increase. To further contribute to the characterization of the macroscopic QGP properties with unprecedented precision, the ALICE Collaboration is writing an LOI of a next-generation multipurpose detector, the ALICE 3. It is a fast and light detector based on the use of monolithic active pixel sensors (MAPS) in combination with deep sub-micron commercial CMOS technologies. It has an excellent vertexing and tracking performance (Si tracker of about 100 m^2), and a large pseudorapidity coverage of $\Delta\eta = 8$. The rate capabilities should be a factor of about 50 higher with respect to ALICE in Run 4, being able to exploit the whole delivered p–A and A–A luminosity. The physics potential of the ALICE 3 experiment is very broad. For example, the search for de-confinement and coalescence with multi-charmed baryons, precision measurements of dileptons and in-medium interaction. Moreover, the unprecedented low momentum reach and particle identification properties of the detectors can be used to carry on searches in low energetic dielectrons and photons giving an opportunity to test theories like Low's theorem. In this talk, an overview of the ALICE 3 experiment and its capabilities to identify low energetic electrons via preshower detector will be presented.

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