Contribution submission to the conference SMuK 2021

Differential analysis of the ALICE TRD anode currents — •Felix Schlepper for the ALICE-Collaboration — Ruprecht Karl University of Heidelberg, Heidelberg, Germany

The ALICE Transition Radiation Detector (TRD) is an array of 522 drift chambers operated with a Xe/CO2 gas mixture (85%/15%). The detector contributes to tracking and particle identification (primarily electrons). In addition, due to the harsh running environments of the upcoming LHC Run 3, the detector will provide crucial information to accurately correct for space-charge distortions in the ALICE Time Projection Chamber. In order to achieve this, stable operation and a detailed understanding of the anode currents of the ALICE TRD at high luminosities is very important. Differential studies of high luminosity tests performed during the LHC Run 2 will be presented. It will also be demonstrated that the TRD currents measured in van der Meer scans can be used to calculate the visible cross section for the experiment. Lastly, an algorithm for the early detection of chaotic currents applied as an example on individual TRD chambers will be shown.

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