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## The new HADES ToF Forward Detector

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The HADES (High-Acceptance DiElectron Spectrometer) at GSI Darmstadt consists of a 6-coil toroidal magnet centered on the beam axis and six identical detection sections located between the coils and covering polar angles between  $18^\circ$  and  $85^\circ$ . The physics aims include the study of the properties of hot and dense hadronic matter—a key problem in heavy-ion physics—as well as elementary and pion-induced reactions.

To increase the acceptance of the HADES spectrometer, a new detector has been built to cover the very low polar angles, between  $0.5^\circ$  and  $7^\circ$ , in the forward region. This new forward detector (FD) is composed of a tracking detector and a TOF detector. The TOF detector, covering an active area of around  $2 \text{ m}^2$ , is composed by 128 strip-like shielded RPC cells, with two different widths 22 mm and 44 mm and 750 mm length distributed in four modules symmetrically placed around the beam axis. Each cell is composed by four gas gaps delimited by three (2 mm) aluminum and two (1 mm) glass electrode. In order to cope with the expected particle load of around  $600 \text{ Hz/cm}^2$  close to the beam axis the detector is operated above room temperature ( $30^\circ$ ) in order to decrease the resistivity of the glass and increase the count rate capability (one order of magnitude reduction on resistivity is expected every  $25^\circ$ ).

The detector was operated in both, an engineering test beam and in a production beam time during six weeks in 2022. The system and the results concerning stability and timing precision of the system ( $\sim 80 \text{ ps}$ ) when operated at  $30^\circ$  are described.

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