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The HADES RICH Upgrade Program*

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The HADES experiment at GSI, Darmstadt, is a key element of the FAIR Phase 0 activities, and will continue data taking at its present location at the SIS 18 accelerator.
The next beamtime has been approved and scheduled for August 2018, with 4 weeks of data taking in $Ag+Ag$ collisions at 1.65 AGeV, aiming to study baryonic matter in the region of high net-baryon density.

For the upcoming beamtime, the HADES RICH detector is currently undergoing an upgrade, to ensure enhanced dielectron reconstruction.
For the upgrade, the current CsI based MWPC will be exchanged with an arrangement of multi-anode photo multiplier tubes (HAMAMATSU H12700).
The upgrade of the photon detector is supplemented by the development of a completely new electronic readout chain, with the 32 ch DIRICH FPGA-TDC readout module as its core element.
The DIRICH module combines discrimination, time measurement, and data handling on a single FPGA, providing a powerful and cost-efficient solution for this kind of sensor.
The larger efficiency of the new photomultiplier sensors will significantly enhance the detection efficiency for e^+e^- pairs with small opening angle and hence reduce combinatorial background.

The poster will give an overview on the advanced status of the HADES RICH upgrade project.
One focus will be on the performance evaluation of the new readout chain, both in lab measurements and prototype tests.
Showing the excellent performance, low noise and good interplay between readout electronics and MAPMTs.
Furthermore, simulation results on the detector performance will be shown, demonstrating the influence of the new components on the overall performance of the improved HADES RICH.

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Content type

Experiment

Collaboration

HADES

Centralised submission by Collaboration

Presenter name already specified

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