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A Timing RPC with low resistive ceramic electrodes

Friday 23 February 2018 11:00 (20 minutes)

For precise start time determination a Beam Fragmentation T0 Counter is under development for the Time-of-Flight Wall of the Compressed Baryonic Matter Spectrometer [1]. This detector will be located around the beam pipe, covering the front area of the Projectile Spectator Detector. The fluxes at this region are expected to exceed 10ˆ5 cm-2s-1.
Ceramic RPCs [2] could be use because of their high rate capabilities and radiation hardness of material. Efficiency (over 97%), time resolution (about 90 ps.) and rate capability over 10ˆ5 cm-2 s-1 were confirmed during many tests with high beam fluxes of relativistic electrons at ELBE and with heavy ions at SPS. We confirm the stability of characteristic with low resistive Si3N4/SiC floating electrodes for a prototype of eight small RPCs, where each of them contains six gas gaps. The active RPC size amounts 20x20 mm2 produced on basis of Al3O2 and Si3N4/SiC ceramics. Newest test results obtained at ELBE with PADI10 FEE will be presented in the talk.

[1] P. Senger, Journ. of Phys. G 28 (2002) 186
[2] A. Akindinov et al., Nucl. Instr. Meth. A 845 (2017) 757

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