

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 $10^5 \text{ cm}^{-2}\text{s}^{-1}$.

Ceramic RPCs [2] could be used because of their high rate capabilities and radiation hardness of material. Efficiency (over 97%), time resolution (about 90 ps.) and rate capability over $10^5 \text{ cm}^{-2} \text{ s}^{-1}$ 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 Al₂O₃ 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

Primary authors: Dr NAUMANN, Lothar (Helmholtz-Zentrum Dresden-Rossendorf); Dr AKINDINOV, Alexander (ITEP); Dr BEYER, Roland (HZDR); Dr DREYER, Jörn (HZDR); Mr FAN, Xingming (HZDR); Dr LASO GARCIA, Alejandro (HZDR); Mr GREIFENHAGEN, Robert (HZDR); Prof. KÄMPFER, Burkhard (HZDR); Dr KOTTE, Roland (HZDR); Mr MALKEVICH, Dmitry (ITEP); Dr PROKUDIN, Mikhail (ITEP); Mr STACH, Daniel (HZDR)

Presenter: Dr NAUMANN, Lothar (Helmholtz-Zentrum Dresden-Rossendorf)

Session Classification: New Ideas