

X. Workshop on Resistive Plate Chambers and Related Detectors

Contribution ID: 40

Type: **not specified**

Development of MMRPC prototype for R3B, FAIR

Wednesday, 10 February 2010 15:50 (20 minutes)

R3B, FAIR collaboration aims to measure four momentum vectors of kinematical complete reaction products from relativistic radioactive nuclei. To achieve energy resolution around 50 KeV ($\Delta E < 50 \text{ KeV}$) for invariant mass of exotic nuclei above neutron threshold, a high energy neutron detector ($1 \text{ GeV} \leq E_n \leq 200 \text{ MeV}$) with very good timing resolution ($\Delta t \sim 100 \text{ ps}$) and position resolution ($\Delta x, \Delta y, \Delta z \sim 1 \text{ cm}$) will be necessary. As an active part of the detector, scintillators with PMT is an easy solution but more economic and useful solution is multi-gap resistive plate chamber (MRPC).

At SINP, Kolkata, we have developed multistrip two/four gap glass RPC (MMRPC). We would like to present details of the designing and development of MMRPC (20cmx40cm) and its performance in comparison with scintillators using gamma source and cosmic background. We want to present also preliminary plan for the design of FPGA based embedded system for the readout controller circuit for Neuland MRPC. We want to discuss about our R&D for RPC gas recovery system by open loop method.

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Session Classification: R & D in narrow-gap RPCs (II)