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Ceramic Resistive Plate Chambers for High Rate Environments

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Multi-gap resistive plate chambers are proposed to build the Time of Flight wall of the Compressed Baryonic Matter experiment (CBM) with a time resolution better than 80 ps. The high fluxes expected at the innermost part of the detector, ~20 x 10^3 cm^{-2} s^{-1} have made necessary the development of new materials capable of withstanding such fluxes.
At Helmholtz Zentrum Dresden-Rossendorf, several RPC prototypes of 10x10 cm^2 and 20x20 cm^2 have been built with ceramic plates with bulk resistivities in the range of 10^9-10^10 Ohm cm [1]. They have been tested at the superconducting electron accelerator facility ELBE with 30 MeV electrons.
We will present characteristics of the ceramic electrodes and the latest results concerning the performance of these prototypes in electron beams up to fluxes of 10^6 cm^{-2} s^{-1}.
[1] L. Naumann et al., NIMA 628(2011) 138-141

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