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Radiation hard ceramic RPC development

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Important scopes of many modern HEP and HI experiments are the start time and reaction plane determination. In fixed target experiments, like CBM, detector for such purposes should have chess-board like single cell structure and should be placed at low angles close to the beam pipe, where radiation and particle fluxes are very high. Timing detectors based on float glass RPCs with pad readout have limited rate capabilities and high percentage of cross-talks. So, RPC systems in forward region have to be made of low resistive and radiation hard materials.

Our work is aimed to develop a timing detector, based on ceramic RPCs, which is foreseen to be used in CBM experiment as beam fragments and T0 counter (BFTC) for start time and reaction plane determination and should operate in harsh environment around the the beam pipe, where particle fluxes are expected to be as high as 2105 Hz/cm2.

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