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A Multistrip-MRPC prototype for the CBM Time-of-Flight wall

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The Compressed Baryonic Matter spectrometer (CBM) is expected to be operational in the year 2018 at the Facility for Anti-proton and Ion Research (FAIR) in Darmstadt, Germany. The key element providing hadron identification at incident energies between 2 and 45 AGeV is a time-of-flight wall placed at 10 m distance from the target covering the polar angular range from 2.5° - 25° and full azimuth. The necessary particle id capabilities require a 80 ps system time resolution at high efficiency and, simultaneously, a rate capability of up to 25 kHz/cm².

The existing conceptual design foresees a 120 m² ToF-wall composed of Multi-gap Resistive Plate Chambers (MRPC) of which the outer-most part can be covered most likely with float glass RPCs in a multi-strip configuration. The CBM-TOF wall will therefore consist of the largest multi-strip RPC system to be used for timing world-wide.

Based on in-beam tests at GSI/SIS18 at Darmstadt and COSY at Juelich we will present results on the performance reached with a fully differential multi-strip MRPC prototype with normal float glass developed at the Physikalisches Institut at University of Heidelberg.

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