

Systematic study of gas mixtures for timing RPCs

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The RPC timing properties are determined by the maximum ionization rate that can be sustained while keeping the streamer fraction at modest values. This last characteristic, resilience to streamers, cannot today be fully calculated, calling for an experimental approach.

In this work we systematically study the influence of a range of gas mixtures on the performance (background counting rate, efficiency, time resolution and charge spectrum) of timing RPCs, using cosmic rays as ionizing particles. In particular, the effect of gas polymerization inhibitors will be evaluated.

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