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## **Precision time measurements of single-gap trigger RPCs for large-scale accelerator-based high-energy physics experiments**

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The goal of the present research is to achieve functionally improved trigger RPCs with a two-dimensional strip readout method whose intrinsic time resolution is better than 500 ps. In the present research, we constructed single-gap RPCs with gap thicknesses of 1.0, 1.6, and 2.0 mm using phenolic high pressurized laminate (HPL). The detector performances was examined for cosmic muons using a 64-channel multi-hit TDC with a time resolution of 17 ps. The test results of the prototype RPCs using cosmic rays show x-y matching coincident efficiency of about 94%, and the images of the two-dimensionally tagged cosmic muons are well reconstructed from the data with a spatial resolution better than 10 mm. The intrinsic time resolution achieved with the 1.0 mm single-gap RPC was estimated to be about 400 ps.

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