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# Oiled Multigap-Gap Resistive Plate Chambers for High-Rate Particle Triggers

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We report a development of oiled multi-gap RPCs for high-rate particle triggers in high-energy physics experiments. RPCs with higher rate capability is promising, especially, for effective muon triggers at the RE1/1 region of the CMS in the LHC experiment. In this study, we designed and built two six-gap prototype RPCs made of 1-mm thick melamine-based high pressure laminated (HPL) resistive plate. Relatively low resistive HPL whose bulk resistivity is less than 10e11 Ωcm was chosen to enhance detection rate capability. The thickness of each gap of the prototype RPCs was 0.65 mm. The prototype RPCs were linseed-oil coated to suppress dark currents and spurious detector hits. The prototype RPCs were tested for cosmic rays and gamma rays to study the detector characteristics, i.e., efficiencies, charge distributions, cluster sizes, noise rates, and detection rate capability. Furthermore, the details for development of the HPL and the choice of the bulk resistivity are also discussed in this report.

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