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## Development of Novel Designs of Resistive Plate Chambers

Resistive Plate Chambers (RPCs) are the key active media of the muon systems of current and future collider experiments as well as the CALICE (semi-)digital hadron calorimeter. The outstanding issues with the RPCs can be listed as the loss of efficiency for the detection of particles when subjected to high particle fluxes, and the limitations associated with the common RPC gases.

We developed novel RPC designs with: low resistivity glass plates; a single resistive plate; a single resistive plate and a special anode plane coated with high secondary electron emission yield material. The cosmic and beam tests confirmed the viability of these new approaches for calorimetric applications. The chambers also have improved single-particle response, such as a pad multiplicity close to unity.

Here we report on the construction of various different glass RPC designs, and their performance measurements in laboratory tests and with particle beams. We will also discuss the future test plans which include the long term performance tests of the newly developed RPCs, investigation of minimal gas flow chambers, and the feasibility study for the large size chambers.

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