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Development of Resistive Cylindrical Chambers

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A new generation of gaseous particle detectors named Resistive Cylindrical Chamber (RCC) has been developed to overcome the limitations of Resistive Plate Chambers and broaden their application range. The principle behind this new technology consists in the transition from a planar to a cylindrical geometry while maintaining an almost planar electric field. The cylindrical structure of the electrodes allows to reach the following goals: increase the gas pressure to improve the intrinsic efficiency of the detector even for thin gas gaps or light gas mixtures; design the detector in order to produce an electric field gradient useful to contain the development of the avalanche discharge.

These features allow to design detectors of simple mechanical realization with time resolution comparable with that of MRPCs maintaining a high efficiency of detection on a single thin gas-gap.

The device pressurization also allows to use new gases in view of the transition to eco-friendly gas

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