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Optimization of the production procedures of thin-gap RPCs

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Resistive plate chambers (RPCs) with thin gas gaps (~ 1 mm) between two high-pressure phenolic laminate plates offer excellent time resolution down to a few hundred picoseconds and a decent spatial resolution of the order of a few millimeters. As RPCs can be produced at relatively low costs they are the ideal choice for the instrumentation of large areas of many experiments. In order to set up a production at external companies we investigated several modifications of the established production procedures of RPCs in order to adapt it to the available devices at different companies and to facilitate the technology transfer to industry. In our contribution we will describe our studies and compare the different options for the individual production steps. We shall present the results of our test production carried out in our institute and show the performance of the produced gaps obtained in tests with muons from cosmic rays.

Authors: KORTNER, Oliver (Max Planck Society (DE)); KROHA, Hubert (Max Planck Society (DE)); SOYK, Daniel (Max Planck Society (DE)); TURKOVIC, Timur (Max-Planck-Institut für Physik)

Presenter: KROHA, Hubert (Max Planck Society (DE))

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