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Characterization of Micromegas detector with elongated pillars

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We present a study of the performance of a resistive Micromegas detector with elongated pillars. The purpose of this study was to certify that these pillars do not deteriorate the resolution and detection efficiency while adding safety in the detector fabrication. It was motivated by the fact that in large-size Micromegas boards produced in industry missing or weakly attached pillars have been observed. In order to overcome this issue pillars with a larger surface and, therefore, better adhesion were proposed. We built a detector with two different pillar shapes. The pillars extend in the direction orthogonal to the readout strips. One region features pillars of 2 mm × 0.2 mm with 4.8 mm pitch while in the other region the pillars extend over the full width of the detector (100 mm). The detector has been characterized with ⁵⁵Fe source and a high energy muon beam at CERN. Results on the detector performance for the two regions and in comparison with standard round pillars are presented.

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