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Study of mesh geometry impact on Micromegas performance with an Exchangeable Mesh prototype

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The fine, conductive meshes used in a Micromegas (MM) to divide drift and amplification regions contribute significantly to the signal formation processes. Systematic studies of the electron transparency and gain impact of different meshes in Micromegas are rare as in most MM applications the mesh is a fixed build-in component.

An Exchangeable Mesh Micromegas (ExMe) consisting of separated drift- and readout- panels and an easy to exchange mesh frame has been designed, built and tested at CERN. This provides the opportunity to study systematically the influence of different meshes keeping all other detector inherent parameters unchanged.

Results from these studies will be presented, including comparison of the experimental data with advanced microscopic simulations carried out in Garfield++.

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