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Performances of large pixelized Micromegas detectors in the COMPASS environment

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New large Micromegas detectors are being developed for the future projects of the COMPASS collaboration at CERN. Compared to the present Micromegas detectors, these ones will have to stand a five time higher flux in hadron beam with a reduced discharge rate, and detect particles in the beam region with a pixelized read-out. Several pixelized prototypes with two different discharge rate reduction technologies (preamplification space with a GEM foil and resistive readout with buried resistors) have been tested in real COMPASS conditions since 2010. Two of them have been included in the spectrometer since 2012 instead of former Micromegas detectors, and participate in the track reconstruction. Their performances (detection efficiency, space and time resolutions, and discharge rates) for different beam intensities and magnetic field conditions are presented in this talk, so are the reconstruction software developments that optimize them. The impact of the new pixelized detect! ors on the COMPASS spectrometer track reconstruction is also presented, with a particular emphasis on the effect of the background reduction due to the improved cluster selection algorithm.

Presenter: THIBAUD, Florian (C)

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