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A simulation tool for MRPC telescopes of the EEE project

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The Extreme Energy Events (EEE) Project is mainly devoted to the study of the secondary cosmic ray radiation by using muon tracker telescopes made of three Multigap Resistive Plate Chambers (MRPC). The experiment is constituted by a network of MRPC telescopes mainly distributed throughout Italy, hosted in different building structures pertaining to high schools, universities and research centers. Therefore, the possibility to take into account the effects of these structures on collected data is important to carry on the large physics program of the project.

A simulation tool, based on GEANT4 by using GEMC framework, has been implemented to take into account the muons interaction with EEE telescopes and to estimate the effects of the structures surrounding the experimental apparatus on data. Dedicated events generator producing realistic muon distribution, detailed geometry and microscopic behavior of MRPCs have been included to produce experimental-like data. The comparison between simulated and experimental data, and the estimation of detector resolutions in different operation conditions will be presented and discussed.

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