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Scintillator based detector developments for the most recent muon physics searches

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Plastic scintillators (including scintillating fibers) coupled to photosensors provide flexible, fast and high granularity detectors which are able to work in high rate environment. The advent of Silicon PhotoMultipliers (SiPMs) has had a strong impact in the development of what we can call a "new age" of plastic scintillator based detectors. Improved detector performances (better spatial and timing resolutions) can be reached with respect to previous detectors, where PhotoMultipliers (PMs) were used, thanks namely to (1) the small photosensor size which allows to couple each single element to its own SiPM and (2) the reduced transit time spread of the photosensor itself. The straightforward application of such a detectors is as a trigger tools. Furthermore the possibility of using SiPMs in magnetic fields strongly simplifies the implementation of such detectors used as tracker devices or to complement the latter, where usually a magnetic field is needed. Finally new beam monitoring detectors able to sustain very high beam intensities can be built. In this talk a review of scintillator based detectors used on the most recent muon physics searches will be given.

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