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Thin scintillating fibers coupled to SiPMs for fast beam monitoring and timing purposes

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Thin scintillating fibers of 250 μm size coupled to silicon photomultipliers form the basis of a fast, versatile and modular detector technology usable in magnetic fields and vacuum. In view of the upcoming cLFV experiments MEGII and Mu3e, we will present its application for the purpose of beam monitoring and timing measurement. The challenge of these detectors lies in the ability to detect minimum ionizing paritcles at high efficiency while keeping the material budget to a minimum. Several detector prototypes have been tested along positron, muon and pion beams, showing that they are able to deliver prompt beam snapshots, to identify particles through charge discrimination and to provide timing resolutions of O(600 ps) at an efficency of > 95 %.

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