

Fibre Detector for the Mu3e Experiment

Mu3e is an experiment under construction at PSI in Villigen, Switzerland looking for the charged lepton flavor violating decay $\mu^+ \rightarrow e^+ e^+ e^-$. The goal is to reach a sensitivity for a branching ratio of 10^{-15} . To achieve this, the world highest intensity continuous surface muon beam is used, and an excellent background rejection is needed.

I will present the scintillating fiber detector, which is being developed in order to get a very precise measurement of the time of decay particles, while affecting their trajectories as little as possible. It consists of three layers of 250 μm fibers, resulting in a thickness of less than 0.2% of a radiation length, and it can achieve a time resolution of around 250 ps at an efficiency 97%.

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