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【317】 Precision timing in the Mu3e experiment towards the search for the muon decay to three electrons

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Mu3e is an experiment under construction at PSI to search for the lepton flavor violating $\mu \rightarrow eee$ decay at branching fractions $> 10^{-16}$. Being heavily suppressed in the Standard Model, its observation would indicate the existence of new physics. Achieving such sensitivity requires a high rate of muons and a large kinematic acceptance; hence, excellent time resolution is essential to suppress the accidental background and to facilitate the global event reconstruction. In particular, the scintillating fiber (SciFi) sub-detector is designed to achieve a very precise time measurement at high efficiency and rate capability. In this talk, the SciFi design and performance is presented in the context of the Mu3e requirements.

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