

The MEGII experiment at PSI and the quest for $\mu \rightarrow e\gamma$ and its experimental limiting factors at future high intensity muon beams

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The search for the Lepton Flavor Violating decay $\mu \rightarrow e\gamma$ exploits the most intense continuous muon beams, which can currently deliver $\sim 10^8$ muons per second. In the next decade, accelerator upgrades are expected in various facilities, making it feasible to have continuous beams with an intensity of 10^9 or even 10^{10} muons per second. We investigate the experimental limiting factors that will define the ultimate performances, and hence the sensitivity, in the search for $\mu \rightarrow e\gamma$ with a continuous beam at these extremely high rates. We then consider some conceptual detector designs and evaluate the corresponding sensitivity as a function of the beam intensity.

Primary authors: RENGA, Francesco; CAVOTO, Gianluca (Sapienza Universita e INFN, Roma I (IT)); PAPA, Angela; RIPICCINI, Emanuele (UNIGE); VOENA, Cecilia (Sapienza Universita e INFN, Roma I (IT))

Presenter: PAPA, Angela

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