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Status and prospects of charged lepton flavor violation searches with the MEG-II experiment

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The MEG experiment took data at the Paul Scherrer Institut in the years 2009-2013
and published the most stringent limit on the charged lepton flavor violating decay
$\mu \to e\gamma$: BR($\mu \to e\gamma$) $< 4.2 \times 10^{-13}$ @90% C.L.

The MEG detector is currently being upgraded in order to reach a sensitivity of $\sim 4 \times 10^{-14}$,
which corresponds to an improvement of one order of magnitude.
The basic idea of MEG-II is to achieve the highest possible sensitivity by making the maximum use (7×10^7 muons/s) of the available muon
intensity at PSI with an improved detector, keeping the background at a manageable level.
The status of the MEG-II detector and the current schedule will be presented.

MEG-II, together with the next generation charged lepton flavor violation experiments Mu3e ($\mu^+ \to e^+e^-e^+$) at PSI and Mu2e and COMET ($\mu \to e$ conversion)
at Fermilab and J-PARC respectively, will reach very high sensitivities in the next years. Accelerator upgrades are also expected, that will make muon beams with intensities of the order of 10^{10} muons/s feasible. At this extremely high beam rates, new detector concepts should be adopted for $\mu \to e\gamma$ searches, in order to overcome the accidental background. Some future directions will be discussed.

Summary

I will present the status and the schedule for the MEG-II experiment
that will search the charged lepton flavor violating decay $\mu \to e\gamma$ with a sensitivity
of $\sim 4 \times 10^{-14}$. I will also discuss future directions for $\mu \to e\gamma$ searches in a scenario with beam intensities of the order of 10^{10} muons, that seems possible in the next years.

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