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Precision muon experiments and the standard model.[1]

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A new generation of precision muon experiments - utilizing modern technologies for time measurements and data acquisition - have been recently performed or are currently underway. They include measurements of the lifetime of the free muon and muonic hydrogen and deuterium atoms as well as a 140 part-per-billion measurement of the muon's anomalous magnetic moment. These experiments address topics from the determination of standard model parameters and the search for new particles / forces to the dynamical origins of hadronic mass and the detailed understanding of solar hydrogen burning. In this talk we briefly review the program of precision muon and muonic atom lifetime measurements at Paul Scherrer Institute and provide an overview and status of the Fermilab muon g-2 experiment.

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