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Muons and Fundamental Symmetries

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A sophisticated series of high-precision experiments involving muons is ongoing worldwide and many efforts have already produced exciting results. The physics addressed is broad, but here we will mainly focus on experiments related to fundamental symmetries. They include establishing parameters: Fermi constant, weak-nucleon pseudoscalar coupling, Michel parameters; searching for physics beyond the standard model: $g-2$, charged lepton flavor violation; and—we will allow this thematic deviation—determination of the proton charged radius as probed by the muonic Lamb shift. I will report on these projects as well as others, which are in progress.