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Abstract for an Invited Paper
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Precison Muon Physics[1]

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The worldwide, vibrant experimental program involving precision measurements with muons will be presented. Recent achievements in this field have greatly improved our knowledge of fundamental parameters: Fermi constant (lifetime), weak-nucleon pseudoscalar coupling (μp capture), Michel decay parameters, and the proton charged radius (Lamb shift). The charged-lepton-violating decay $\mu \to e\gamma$ sets new physics limits. Updated Standard Model theory evaluations of the muon anomalous magnetic moment has increased the significance beyond 3 σ for the deviation with respect to experiment. Next-generation experiments are mounting, with ambitious sensitivity goals for the muon-to-electron search approaching 10^{-17} sensitivity and for a 0.14 ppm determination of $g-2$. The broad physics reach of these efforts involves atomic, nuclear and particle physics communities. I will select from recent work and outline the most important efforts that are in preparation.

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