Muon g-2: Past and Future

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The muon anomalous magnetic moment effectively represents a sum rule of known physics. I will discuss the muon g-2 experiment at Brookhaven, where we have reported our final result in 2004 with an uncertainty of 0.54 parts per million, and have published a detailed description of the experimental methods in April of this year. As of that publication, the Standard Model theory is 2.2 to 2.7 standard deviations below experiment. That is the past. For the future, I will present a proposed improved measurement, and discuss the expected improvements in the theoretical prediction for the Standard Model.