Future Prospects for a Muon g-2 Experiment DAVID HERTZOG, CHRIS POLLY, University of Illinois at Urbana-Champaign, NEW MUON G-2 COLLABORATION — The final results from the muon g-2 experiment at Brookhaven National Laboratory were published in 2004. The difference between the final experimental result and the current theoretical prediction for $a_\mu$ reveals a $3.4\sigma$ discrepancy with the Standard Model, hinting at the possibility of new particles entering via quantum fluctuations. The experiment ended in a statistical error dominated regime, thus enabling a future generation muon g-2 experiment to be pursued with a higher muon flux and relatively minor modifications to the basic technique. The motivation for a new experiment will be discussed along with a description of design improvements and siting considerations for a new effort at BNL, FNAL, or JPARC.

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