Abstract Submitted
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Eliminating detector back action from electron/positron magnetic moment measurements[1] XING FAN, Harvard University, Center for Fundamental Physics Northwestern University, SAM FAYER, THOMAS MYERS, BENEDICT SUKRA, GERALD GABRIELSE, Center for Fundamental Physics Northwestern University — Measurements of g-factor of an electron and a positron provide the most stringent test of the Standard Model. They are limited by detector back action that damps the single particle motion being detected. We present a quantum calculation that replaces the classical description used to date. We explore the reduced measurement linewidths and new measurement limits that become possible if the detection motion is decoupled from the particle during crucial parts of the measurements.

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