



*NEW YORK CITY COLLEGE OF TECHNOLOGY*  
**Physics Department**  
**Seminar in Theoretical Physics**

# **The Muon $g-2$ Discrepancy: New Physics or a Relatively Light Higgs?**

*Presented by:*

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## **Abstract**

After a brief review of the muon  $g-2$  status, I'll discuss hypothetical errors in the Standard Model prediction that might explain the present discrepancy with the experimental value. None of them seems likely. In particular, a hypothetical increase of the hadroproduction cross section in low-energy  $e^+e^-$  collisions could bridge the muon  $g-2$  discrepancy, but it is shown to be unlikely in view of current experimental error estimates. If, nonetheless, this turns out to be the explanation of the discrepancy, then the 95% CL upper bound on the Higgs boson mass is reduced to about 135 GeV which, in conjunction with the experimental 114.4 GeV 95% CL lower bound, leaves a narrow window for the mass of this fundamental particle.