中国物理 C 2010 34 (06): 735—740 ISSN: 1674-1137 CN: 11-5641/O4 首页 当期目录 上一期

03 MUON g-2

Muon g−2 discrepancy: new physics or a relatively light Higgs?

M. Passera[1],W. J. Marciano[2],A. Sirlin[3]

[1] Istituto Nazionale Fisica Nucleare, Sezione di Padova, I-35131, Padova, Italy

[2] Brookhaven National Laboratory, Upton, New York 11973, USA

[3] Department of Physics, New York University, 10003 New York NY, USA

收稿日期 2010-2-5 修回日期 网络版发布日期 2010-5-5 接受日期 2010-5-5

摘要 After a brief review of the muon g−2 status, we 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.

关键词 muon anomalous magnetic moment, Standard Model Higgs boson

分类号

DOI:

通讯作者:
M. Passera massimo.passera@pd.infn.it
作者个人主页:

M. Passera[1];W. J. Marciano[2];A. Sirlin[3]