

Moments Magnétiques Anomaux

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Chapitre 1

Moments Magnétiques Anomaux

1.1 Introduction

Le moment magnétique anomal d'une particule est l'écart entre sa valeur mesurée et la prédiction de Dirac. La théorie T0 offre une explication élégante de ces anomalies.

1.2 Définition

Le facteur gyromagnétique anomal est défini comme :

$$a = \frac{g - 2}{2} \quad (1.1)$$

où g est le facteur gyromagnétique.

1.3 Anomalie de l'électron

Pour l'électron :

$$a_e = \frac{\alpha}{2\pi} + O(\alpha^2) \quad (1.2)$$

title

La théorie T0 prédit :

$$a_e^{T0} = \frac{\xi}{2\pi} \cdot f_e \quad (1.3)$$

avec f_e un facteur géométrique.

1.4 Anomalie du muon

L'anomalie du muon est particulièrement intéressante car elle montre un écart avec le Modèle Standard :

$$a_\mu^{\text{exp}} - a_\mu^{\text{SM}} \approx 2.5 \times 10^{-9} \quad (1.4)$$

title

La théorie T0 explique cet écart par les corrections du champ ξ :

$$\Delta a_\mu = \xi^2 \cdot g_\mu \quad (1.5)$$

1.5 Prédiction testables

1. Mesures de haute précision à g-2 de Fermilab
2. Corrélations entre les anomalies des différentes particules
3. Dépendance énergétique des moments magnétiques

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