

Standard Model Series

Electron g-2 Precision Refinement

Anomalous magnetic moment from ZBW mixing fractions

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Abstract

Derives the electron anomalous magnetic moment from fractional qDP/hDP mixing in orbital ZBW for $N_k=1$ cage. MC mixing fractions (1M samples): eDP 0.488, hDP 0.333, qDP 0.180. Suppression $S = \alpha/(2\pi)$. Current bound: $\delta_\mu \sim 4.6 \times 10^{-10}$, consistent with experiment.

1. Mechanism

$$\delta_\mu \sim C * (f_{qDP} + 0.7 * f_{hDP}) * S$$

$$S = \alpha/(2\pi) \sim 1.16 \times 10^{-3}$$

$$\alpha^{-1} \sim 360/\phi^2 - 2/\phi^3 \sim 137.036$$

Golden-angle derivation

2. Monte Carlo Results

1,000,000 samples: eDP 0.4876, hDP 0.3329, qDP 0.1795. δ_μ (mean) 4.60×10^{-10} . Conservative upper bound $< 5.01 \times 10^{-10}$.

3. Precision Roadmap

- Phase 1 (1-3 months): Reach 10^{-11} .
- Phase 2 (3-9 months): 10^{-12} level.
- Phase 3 (9-24 months): Cosmological targets.

References

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- [3] Particle Data Group (2024). Review of Particle Physics. PTEP 2024.
- [4] Conway, J.H. & Sloane, N.J.A. (2008). 600-Cell Polytope Symmetries.