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DET and the Muon g-2 Anomaly

The anomalous magnetic moment of the muon (g-2) has been a persistent challenge for the Standard Model. Recent experimental results at Fermilab continue to show a small but statistically significant deviation between the measured muon g-factor and the Standard Model prediction. This discrepancy is on the order of 2.5 × 10⁻⁹ and has been interpreted as evidence for physics beyond the Standard Model.

DET offers a natural explanation for this anomaly through torsional scalar rebound effects.

DET g-factor structure

In DET, the magnetic moment receives corrections not from vacuum loops or virtual particles, but from torsional memory effects in the scalar emission field. The general form is:

**g = 2 + (α / π) · f(τ, σ)**

where:

* α is the fine-structure constant
* τ is the torsional rebound factor
* σ is the scalar shell dispersion
* f(τ, σ) encodes how torsion and shell geometry modify the magnetic moment

For electrons, f(τ, σ) ≈ 0.5 reproduces the known Schwinger correction (α / 2π ≈ 1.16 × 10⁻³).

Scaling to the muon

DET links mass to shell dispersion through:

**m = (Pe · ψ · σ) / c²**

where Pe is emission pressure and ψ is coherence. For heavier leptons, the shell dispersion and torsional memory grow. This implies that muons will experience a stronger torsional correction than electrons, while still being small compared to the baseline g = 2.

The correction scales approximately as:

aμ ≈ (α / 2π) · (mμ / me) · τ

where aμ = (g-2)/2.

Numerical estimate

* α / 2π ≈ 1.16 × 10⁻³
* Mass ratio mμ / me ≈ 206.7

Baseline scaling: aμ ≈ 0.24 · τ

To match the observed anomaly (2.5 × 10⁻⁹), DET requires τ ≈ 10⁻⁸.

Interpretation

* The anomaly emerges naturally from a torsional rebound correction at the 10⁻⁸ scale
* This explains why the electron g-2 is essentially exact, while the muon exhibits a measurable deviation
* No exotic particles or higher-order loops are needed. The anomaly arises from scalar memory effects tied to shell rebound

Conclusion

DET provides a causal, falsifiable explanation for the muon g-2 anomaly. By attributing the deviation to a torsional rebound factor on the order of 10⁻⁸, DET lands in the correct range of the experimental discrepancy. This result suggests that quantum anomalies can be reinterpreted as signatures of scalar emission dynamics rather than virtual processes.

References

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