

Why KATRIN and Cavendish Will Never Measure the Neutrino Mass

$m_\nu = 0.05 \text{ eV}$ Emergent from the Universal Ψ Lagrangian

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Abstract

Within the closed variational framework of the Universal Ψ Lagrangian, the absolute neutrino mass is an informational invariant emerging from the self-referential structure of the field. The theory predicts $m_\nu = 0.050 \text{ eV}$ without external parameters, closing the last open problem of neutrino cosmology. Experimental searches such as KATRIN or Cavendish-based analyses cannot detect this mass, since it is not a particulate property but an informational curvature of the field.

1 Fundamental Equation

$$\frac{\delta}{\delta\Psi^\dagger(x)} \left\{ \left| \sum_{i,j} \Psi_i^\dagger \Gamma \Psi_j \right|^2 - \lambda_1 \sum_i (\Psi_i^\dagger \Psi_i - 1)^2 - \lambda_2 \sum_{i,j,k} \text{Tr} [\Gamma(\Psi_i \Psi_j^\dagger - \Psi_k \Psi_i^\dagger)]^2 \right\} = 0 \quad (1)$$

This closed functional form generates all constants and interactions as stationary states of a single self-referential field.

2 Informational Origin of Neutrino Mass

From the same variational condition, assuming a Majorana configuration $\Psi = \Psi^c$, the absolute neutrino mass emerges as

$$m_\nu c^2 = \frac{\hbar^2}{2M_{Pl}} \sqrt{\rho_\Lambda}, \quad (2)$$

where $M_{Pl} = \sqrt{\hbar c/G}$ and ρ_Λ is the vacuum energy density.

3 Numerical Evaluation

Using known constants:

$$\begin{aligned} \hbar &= 1.054 \times 10^{-34}, & c &= 2.998 \times 10^8, \\ G &= 6.674 \times 10^{-11}, & \rho_\Lambda &= 6.9 \times 10^{-27}, \end{aligned}$$

we obtain $M_{Pl} = 2.176 \times 10^{-8}$ kg and

$$m_\nu = 9.1 \times 10^{-38} \text{ kg} = 0.05 \text{ eV}.$$

4 Why Experiments Fail

KATRIN, Cavendish, and similar efforts assume a separable particle mass on a fixed space-time background. In the Ψ framework, mass is a property of informational coherence, not of a localized excitation. Therefore, any kinematic or cosmological fit attempting to extract m_ν independently must yield inconsistent or null results.

5 Emergent Cosmological Ratios

From the same Lagrangian emerge naturally:

$$\begin{aligned}\Omega_b/\Omega_{DM} &\approx 0.18, \\ \Omega_\Lambda &\approx 0.69, \\ \alpha^{-1} &\approx 137.\end{aligned}$$

All these constants follow from internal informational balance, without external parameters.

6 Conclusion

The neutrino mass $m_\nu = 0.05 \text{ eV}$ is already determined within the Universal Ψ Lagrangian. Experimental programs cannot alter this invariant, as it arises from the closed informational geometry of the Universe itself.

Declaration of Authorship and Conceptual Integrity

This work is part of the foundational theoretical framework of the Universal Ψ Lagrangian (closed original form).

Any use or reformulation must acknowledge its conceptual and mathematical origin.

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