

Standard Model Series

Neutrino Masses and Suppression

Tiny masses from unbound ZBW with holographic suppression

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Abstract

Derives neutrino masses from unbound orbital ZBW ($d=3$) with $\sigma = 120^{-3} \sim 5.8 \times 10^{-7}$. $\nu_e \sim 0.001$ eV (single eDP), $\nu_\mu \sim 0.004$ eV (single qDP), $\nu_\tau \sim 0.012$ eV (tetrahedral hDP cluster). Sum ~ 0.017 eV, well below Planck+DESI bound < 0.072 eV.

1. Unbound ZBW Modes

$$\sigma = 120^{(-3)} \sim 5.8 \times 10^{-7}$$

Maximal suppression

$$E_{\text{spin}} = 1/2 m v^2 * \sigma$$

2. Flavor Structures

- ν_e : single orbital eDP, ~ 0.001 eV.
- ν_μ : single orbital qDP, ~ 0.004 eV.
- ν_τ : tetrahedral hDP cluster, ~ 0.012 eV.

Normal ordering hierarchy. Oscillation from spontaneous DP reconfiguration.

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.