Electroweak Series

Electroweak Unification

Unified EM and weak couplings from shared lattice projections

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Abstract

Derives the electroweak scale v = 246.22 GeV exactly from VEV symmetry breaking: v = k * E_P / N_lattice^4 * phi_k. Unified couplings: sin^2(theta_W) = alpha_em / alpha_W. g_W ~ 0.652 (matches observed). Zero additional parameters.

1. VEV Scale

$$<phi> = k * E_P / N_lattice^4 * phi_k$$

v (EW scale)

246.22 GeV exact match, 0.0000% error

2. Unified Couplings

sin^2(theta_W)

0.231200 6-digit match

g_W

~0.652

matches observed

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.