

Standard Model Embedding — RS Toy c-Parameters & Flavour Note

- Purpose: Show, in one glance, that a minimal warped (Randall-Sundrum) compactification can accommodate charged-lepton hierarchies with O(1) 5D Yukawas and provide a path to quark/lepton mixing (CKM/PMNS).
- Setup: S^1/Z_2 warped extra dimension with metric $ds^2 = e^{-2ky} \eta_{\mu\nu} dx^\mu dx^\nu + dy^2$; stabilized modulus with $k\pi r_c \approx 11$; IR-localized Higgs.
 - Effective Yukawas: $y_4^D \approx Y_5^D \cdot \exp[(1 - c_L - c_R) k\pi r_c]$; masses $m \approx y_4^D v/\sqrt{2}$ ($v=246$ GeV).
 - Toy numbers (symmetric $c_L=c_R$): reproduce (e, μ , τ) at order-of-magnitude; quark sector analogous with generation-dependent c's.
 - Flavour & mixing: CKM/PMNS arise from misalignment of Yukawas in up/down and lepton sectors; overlapping profiles \mapsto hierarchical matrices. (Details in Supplement.)
 - Anomalies: 4D SM zero-mode spectrum is anomaly-free; 5D localized anomalies canceled by Chern-Simons terms/counterterms.

lepton	m_target[GeV]	y_target	c_L	c_R	y_eff	m_reco[GeV]
e	0.000511	2.938e-06	1.079	1.079	2.938e-06	0.000511
mu	0.105660	6.074e-04	0.837	0.837	6.074e-04	0.105660
tau	1.776860	1.021e-02	0.708	0.708	1.021e-02	1.776860

Remark: Table is illustrative; a full fit tunes (c_L , c_R) per generation, includes bulk mass signs, brane kinetic terms, and CP phases. The key point is mechanism sufficiency, not a unique set of parameters.