TFPT Prediction: Baryon Asymmetry from the Leptogenesis Interface

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Standalone prediction note – April 27, 2026

Abstract

This note isolates the baryon-asymmetry row as a downstream leptogenesis comparison target.

Prediction scope and audit

Target. $\eta_B = 5.97 \times 10^{-10}$
Status. Cosmology comparison; flavored leptogenesis interface.
Dependency class. cosmology comparison C_{cos}
Kill or pressure test. robust exclusion of the quoted branch value under the declared Boltzmann solver.

1 Standalone Minimal Kernel

Minimal TFPT kernel used in this prediction

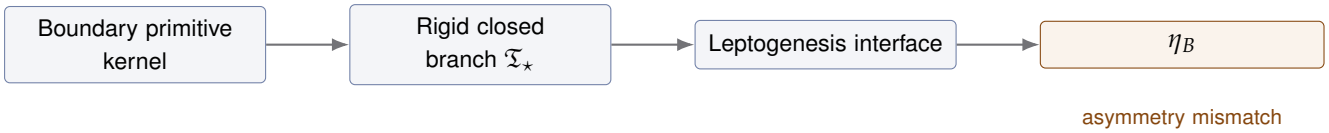
The standalone input package is the boundary-polarized closed branch

$$\mathfrak{S}_{\mathrm{min}} \Rightarrow \mathcal{B}_{\mathrm{min}} \Rightarrow \mathfrak{T}_{\partial}^{\mathrm{min}} \Rightarrow (\tau_{\mathrm{dbl}}, \iota_C, P_{\mathrm{prim}}, [u_\Sigma], c_3) \Rightarrow d^{\star}_{\mathrm{disc}} \Rightarrow P_{\mathrm{adm}} \Rightarrow \mathfrak{T}_{\star}.$$

The prediction uses only the sector map named in its audit box. Numerical comparison conventions are not theorem inputs; they enter only at the final interface row.

The paper is intentionally one-row: it does not reprove the full TFPT series. It states the minimal closed-branch input needed for this prediction, shows the sector map, and gives the direct failure mode. The source status follows the TFPT 4.5 split: boundary and carrier inputs are core, electromagnetic/flavor/metrology inputs are bridge readouts, QFT closure is conditional, and cosmology rows are downstream comparison targets when explicitly marked.

2 Dependency Graph



The row is downstream of reheating and heavy-neutrino input data.

3 Derivation

The cosmology interface fixes a reheating / leptogenesis input block

$$(\Lambda_{\mathrm{IR}}, N_{\mathrm{DW}}, \theta_i, T_R, \mathcal{I}_{\mathrm{LG}}).$$

The flavored Boltzmann system has schematic form

$$\frac{dY_{N_i}}{dz} = -D_i(Y_{N_i} - Y_{N_i}^{eq}), \qquad \frac{dY_{\Delta_\alpha}}{dz} = \sum_i \epsilon_{i\alpha} D_i(Y_{N_i} - Y_{N_i}^{eq}) - W_{i\alpha} Y_{\Delta_\alpha}.$$

The operational target recorded in the ledger is

$$\eta_B = 5.97 \times 10^{-10}.$$

4 No-Knobs and Failure Surface

No-knobs audit

The numerical asymmetry is a comparison-layer solution of the declared nonequilibrium system; it is not a primitive constant.

5 Minimal Submission Claim

The standalone claim is limited to the displayed target and dependency class. It does not assert that every comparison row of the full TFPT ledger has the same proof status. Any update of the upstream boundary kernel, carrier theorem, or sector map must be propagated into this prediction before the numerical row is distributed.

References

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