

TFPT Prediction: Cosmic Birefringence from Determinant-Line Response

Stefan Hamann

Alessandro Rizzo

Standalone prediction note – April 27, 2026

Abstract

This note isolates the cosmic-birefringence row as a determinant-line response. It is not part of a single seed quartet in the physical observable layer.

Prediction scope and audit

Target. $\beta = 0.2424^\circ$

Status. Physical observable; determinant-line/Chern–Simons response.

Dependency class. determinant response R_{CS}

Kill or pressure test. externally calibrated $\beta = 0$ within $\pm 0.05^\circ$.

1 Standalone Minimal Kernel

Minimal TFPT kernel used in this prediction

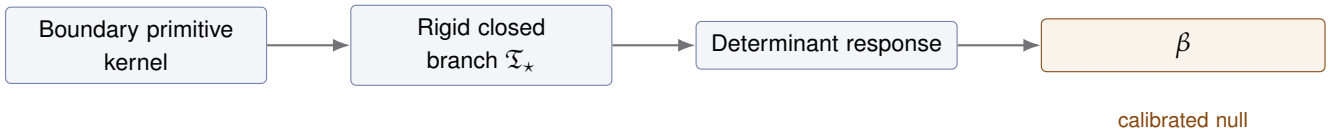
The standalone input package is the boundary-polarized closed branch

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

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 response row is sectorized away from the old seed quartet.

3 Derivation

The retained UV expression is

$$\beta_{\text{rad}} = \frac{\varphi_0^{\text{ret}}}{4\pi}, \quad \varphi_0^{\text{ret}} = \frac{1}{6\pi} + \frac{3}{256\pi^4}.$$

In degrees this gives the row recorded as

$$\beta = 0.2424^\circ.$$

The physical dependency class is not the old seed quartet but the determinant-line response

$$\mathfrak{T}_* \mapsto R_{\text{CS}}(\mathfrak{T}_*) \mapsto \beta.$$

The comparison row is made against calibrated CMB rotation analyses without EB self-nulling.

4 No-Knobs and Failure Surface

No-knobs audit

The direct falsifier is a calibrated achromatic CMB rotation analysis consistent with $\beta = 0$ inside $\pm 0.05^\circ$ under the declared convention.

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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