Predictions and Observational Tests of the CPT Cosmological Framework

universe-physics.com — CPT Cosmology Series

Scored, not a theorem (2026-09-20; inventory sentence 2026-10-08). The particle halo is retired as inventory. Galactic currents do not do that retirement. July Z-pinch as Tully–Fisher / missing mass = Birkeland is **closed-negative** (P-HI leftover $\sim 0.4\%$ of v^2/R). $\Omega_{\mathrm{CDM}}=0$ is not written. Do not present Great Wave or XRISM as confirmed where standard models struggle. Live claims: cpt-physics.com/status.

Abstract

A scientific model must make specific, falsifiable predictions. This paper catalogues narrative predictions of the CPT framework. The particle halo is retired as inventory. Galactic currents do not do that retirement. Live claims live at cpt-physics.com/status.

---

1. Confirmed Predictions

Primordial Nucleosynthesis & The Lithium-7 Deficit

- **CPT Prediction:** The Cosmological Lithium-7 problem is resolved by velocity-dependent Weber gravity and early-universe global G_{eff} shifts. The velocity-dependent suppressions of the Coulomb barrier enhance the $^7\text{Li}(p, \alpha)^4\text{He}$ destruction rate, while the early vacuum eversion phase state shifts gravity globally to $G_{\text{eff}} \approx 0.993 G_0$, slowing the expansion and allowing reactions to reach equilibrium.
- **Observation:** Measured Lithium abundances match the Spite plateau ($\approx 1.6 \times 10^{-10}$), representing a 96.7% reduction from the standard BBN value (5.8×10^{-10}) while preserving Helium-4 and Deuterium constraints.

The Primordial Spectral Index (n_s)

- **CPT Packaging Model:** The primordial density perturbation spectrum exhibits a red tilt modeled from the topological scaling dimension of a $T(2,3)$ trefoil knot lattice ($\Delta = 1/6$) in a 5D topological phase space: $$n_s = 1 - \frac{\Delta}{5} - \frac{\alpha}{\pi} = \frac{29}{30} -

\frac{\alpha}{\pi} \approx 0.96435$$

- **Observation:** The Planck 2018 satellite measurement yields $n_s = 0.9649 \pm 0.0042$, matching the model within -0.13σ (with α as an input). Under CPT Doctrine v1.1.11, this is catalogued as an empirical packaging model rather than an unconditioned first-principles derivation.

Early Massive Galaxies (JWST)

- **CPT Prediction:** Gas collapse along cosmic Birkeland current filaments is driven by electromagnetic plasma forces, compressing ionized gas orders of magnitude faster than standard gravity-only hierarchical collapse.
- **Observation:** JWST has discovered highly mature, massive galaxies ($10^{11} M_{\odot}$) at $z > 7$, “impossibly early” for standard hierarchical assembly.

---

2. Testable Predictions (Pending)

CMB Acoustic Peaks (narrative)

- **Spoke narrative (not a live hub theorem):** A Z-pinch modified Poisson equation is not the framework’s missing-mass law. The particle halo is retired as inventory. This sketch does not do that retirement and is not a scored rotation-curve law. $\Omega_{\mathrm{CDM}}=0$ is not written.

The S_8 Clustering Amplitude

- **Spoke narrative (not a live hub theorem):** Governed by metric potential lapse Φ, not an unconfirmed dark energy fluid. The particle halo is retired as inventory. Galactic currents do not do that retirement.

The Hubble Tension Resolution

- **CPT Status:** Under CPT, the cosmic container has a static metric radius $R \approx \sqrt{6} c / H_0$. The apparent Hubble tension between early CMB angular calibrations and late distance ladders reflects the assumption of an unvarying FLRW metric expansion history. In CPT, the clothes baseline $H_0=68.973\text{ km/s/Mpc}$ is convention-conditional **[P]**, not a dynamical expansion rate.

3. ΛCDM Problems Resolved

Problem	CPT Framework Resolution
Dark matter (no detection)	Infrared constitutive metric yield ($a \lesssim a_0 = c^2/R$) explains flat rotation curves and BTFR from baryons alone. Not retired by currents (P-HI leftover $\sim 0.4\%$).
Dark energy (unexplained Λ)	Zero vacuum fluid ($\Lambda = 0$). Apparent acceleration ($q_0 < 0$) and DESI (w_0, w_a) are non-FLRW geometric and template-fitting artifacts (§0bn1077, §0bn1078).
Cosmological Lithium-7 problem	Weber-enhanced Coulomb barrier penetration and G_{eff} freeze-out shifts (active research hypothesis).
S8 tension	Governed by metric potential lapse Φ, not an unconfirmed dark energy fluid. Weak lensing remains decoupled from fluid DE.
Hubble tension	Convention-conditional ($H_0 \approx 69\text{ km/s/Mpc}$) derived from static metric radius $R \approx \sqrt{6}\, c / H_0$.
Horizon/Flatness problems	Intrinsic geometric property of living in a local region $r^2/R^2 \ll 1$ of static $S^3(R)$; no fine-tuning or cosmic inflation required.
Impossibly early galaxies (JWST)	Early Heegaard topological condensation epoch and electromagnetic plasma structuring on cosmic filaments.