

Waibon II (TEDC): System-Level Time–Energy Density Correlation for Robust Timekeeping

Preprint outline (no formulas) · 11 Sep 2025

Abstract

The invention relates to a method, system, and computer program product for correcting standard time and/or positioning using a newly defined Time–Energy Density Correlation (TEDC) Equation (Waibon II). The method comprises: estimating matter density; evaluating gravitational potential; computing a TEDC correction term as a dimensionless function of these parameters; and adjusting timing or positioning outputs accordingly. The system includes modules for estimation, potential evaluation, TEDC computation, and integration into timing/navigation outputs, implemented via processors or software. A non-transitory computer-readable medium storing instructions for the method is also claimed. TEDC unifies temporal, spatial, and energy–matter dynamics under a coupled master equation, validated by mathematical derivation, numerical simulation, and AI-assisted verification. Applications include GNSS, optical clocks, fiber-based time transfer, quantum navigation, and deep-space synchronization. TEDC thus provides improved accuracy in timekeeping and navigation while demonstrating human–AI co-creation of scientific knowledge.

1. Motivation & Background

- Instability across heterogeneous environments
- Constraints in practical metrology and distributed systems

2. Concept (non-enabling)

- Time correction as a system layer; integration path with existing protocols at a high level

3. Evaluation Plan (post-NDA)

- Metrics: Allan deviation, PTP/NTP offset jitter, drift/day
- Datasets and trial conditions to be defined with partners

4. Industrial Relevance

- Telecom timing, fintech, navigation, deep space

5. IPR & Availability

Patent filed (Thailand): DIP D256809042293 — 11 Sep 2025. This is a non-enabling abstract: no equations, parameters, algorithms, or implementation details are disclosed.

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