The Terameter (Tm): A Propulsion-Grade Unit Correcting Distance in ΛCDM Cosmological Models

Amber Blakley – Forensic Astrophysicist

Abstract

This paper describes over misuse of the light-year metric. With the favor of the Terameter; a ruler-based, propulsion-compatible unit of distance. It adjust interstellar modeling from science fiction abstraction to operational parameters, enabling real mission planning, containment logic, and velocity sync. The implications span cosmology, engineering, and planetary deployment.

Introduction

The light-year has long served as a placeholder—tied to massless velocity and observational discrepancies. But it fails to model propulsion, viable misions, or mission-grade deployment. This paper removes the light-year from scientific modeling and replaces it with the Terameter: a measurable, ruler-based unit compatible with thrust choreography and interstellar planning. Kepler-452b becomes a reachable planetoid. The cosmos becomes a new frontier.

Section 1: Metric Override – Declaring the Terameter

The Terameter (Tm), equal to 10^{12} meters, is declared as the operational metric to the light-year. It is ruler-based, measurable, and compatible with propulsion modeling. Unlike the light-year, it does not rely on massless velocity or unrealistic physics. It enables distance logic, thrust choreography, and velocity sync. The narrative shifts from metaphoric to mission plausible.

Section 2: Contradiction to the Standard model

The light-year introduces unrealistc metric—distances framed by photons, not propulsion. It cannot model feasible, fuel, or interstellar mission standards. Removing it restores viable

mission expectations. The Terameter enables real deployment. The cosmos becomes a reachable explorable.

Section 3: Plausible Exoplanet – Kepler-452b

Kepler-452b is a super-Earth exoplanet orbiting a G-type star in the habitable zone, approximately 1,800 light-years from Earth. Under Terameter logic, this becomes roughly 17,000 Tm—a measurable span. At conventional propulsion speeds ($0.1c$), travel time is approximately 570 years. However, under Engine 1-A's quantum field thrust and HAL modulation—powered by 21 petawatts—relativistic velocities become plausible. Mission time compresses dramatically:

- **Onboard frame:** ∼2–5 hours due to relativistic time dilation
- **Earth frame:** ∼1–2 years observed duration

Containment logic, ISM resistance, and fuel modeling become calculable. Kepler-452b is no longer out of reach. It is a reachable and excellent candidate for further exploration missions.

Section 4: Mission Modeling – Kepler-452b Deployment

Under standard light-year metrics, Kepler-452b remains symbolic—tied to massless velocity and observational abstraction. Under Terameter logic and Engine 1-A propulsion, it becomes a launch-ready destination.

Mission parameters shift from poetic to operational:

- **Distance:** ∼17,000 Terameters
- **Velocity sync:** ∼0.99c via quantum field thrust
- **Containment logic:** HAL thruster modulation, ISM resistance modeling, mass-preserving inertial gating
- **Mission timeframe:** ∼1–2 years Earth frame, ∼2–5 hours onboard frame

Section 5: Cosmological Implications

It's an underestimation of unit tied to the observations of the photon being a massless standard. In cosmology, it's redundant to tie this same aspect to an object *with* mass traveling the cosmos.

Removing the light-year allows for **next-year ready mission parameters**. It enables realistic space-bound missions—not just for astrophysics, but for all fields of science to be counted in.

That's the implication we have. That is a future worth exploring.

Closing Declaration

When we think of the leaps we must take, we can expect them to be just as we've described. Setting aside misconceptions. Realizing that wanting to explore the universe shouldn't have to be outside anyone's lifetime.

Having a chance to really see the stars shouldn't be bound to expensive telescopes, exclusive organizations, or the highest bidder.

Our universe was made for all of us. I think it's time we just accept it. Stop wasting time. Start to engage in exploring.

Like the frontier itself, it beckons. Are we willing to wait another century?