

El Science: A Dynamic Model of Dark Energy

By EL Tauk

This document presents the foundational framework of **El Science**, a dynamic cosmological model proposing that dark energy is not a fixed, mysterious constant, but a phenomenon that evolves with the universe's age and size. The purpose of this paper is to establish clear authorship and provide a timestamped scientific presentation suitable for archival on Zenodo.

1. Simple Explanation

The universe is accelerating. Traditionally, scientists assumed this acceleration is caused by a constant dark energy (the cosmological constant Λ). But nothing else in nature behaves this way. Nothing grows fastest at the end of its life. Acceleration is a sign of youth, not exhaustion. El Science proposes that dark energy increases and evolves while the universe grows, and only later stabilizes into the constant-like behavior we observe today. This view treats the universe as a dynamic, developing system — not an old one running out of energy.

2. Scientific Framework

The El Science model defines dark energy density as a function of cosmic time and scale factor: $\rho\Lambda(t) = (3 / (8\pi G)) * (1 / t^2) * [\ln(a(t) / a_0)]^2$ Using the continuity equation $d\rho/dt + 3H(\rho + p) = 0$, we derive the equation of state: $w(t) = -1 + (2 / (3 H t)) - (2 / (3 \ln(a(t)/a_0)))$ This $w(t)$ evolves naturally, crossing different regimes before approaching $w \rightarrow -1$ at late times, recovering de Sitter expansion consistent with Λ CDM. When inserted into the Friedmann equation, this model produces late-time acceleration without requiring a fundamental cosmological constant. Instead, Λ emerges as a limiting phase of a deeper, dynamic process.

3. Conclusion

El Science provides a logically and mathematically consistent dynamic model for cosmic acceleration. It preserves compatibility with general relativity and observed late-time expansion, while offering a physical explanation for the emergence of Λ -like behavior. This PDF serves as the official archival record establishing the origin and authorship of the model.

Published: 2025