Wormhole Stabilization

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1 Introduction

Below is a simplified table summarizing the key equations and concepts involved in the scenario of utilizing the Casimir Effect, Schrödinger equation, quantum tunneling, and stabilization with tachyonic matter within the context of a cylindrical wormhole.

— Aspect — Equation/Concept — ——————————————————————————— — Casimir Effect — $\rho = -\frac{\pi^2 \hbar c}{240 d^4}$ — — — $F = \frac{\pi^2 \hbar c}{60 d^5}$ — — Schrödinger Equation — $-\frac{\hbar^2}{2m}\frac{d^2\psi}{dx^2} + V(x)\psi = E\psi$ — — Quantum Tunneling — $P = |T|^2$ (Tunneling Probability) — — Cylindrical Wormhole Geometry — Morris-Thorne metric: $ds^2 = -e^{2\Phi(r)}dt^2 + \frac{dr^2}{1-b(r)/r} + r^2 d\theta^2 + dz^2$ — — Wormhole Schrödinger Equation — Incorporate wormhole geometry into Schrödinger equation with modified potential term — — Tachyonic Matter Field Equations — $\nabla^2\phi - \frac{m_t^2}{\hbar^2}\phi = 0$ (Simplified form) — — Wormhole Stability — Introduce tachyonic matter field into wormhole metric for stability analysis —

This table provides a concise overview of the main equations and concepts involved in each aspect of the scenario. Detailed derivations, calculations, and implementations of these equations would require advanced mathematical and theoretical physics knowledge.