

Growth Systems: A Coherence-Driven Theory of Evolving Equilibrium

Abstract

A nonlinear oscillatory field where equilibrium is dynamically constructed and structure emerges through coherence.

Governing Equation

$$d^2\Phi/dt^2 + R(\Phi)d\Phi/dt = D\nabla^2\Phi - k(\Phi-Z) + \gamma C/(E)(1-|\Phi-Z|/L)$$

Coherence

$$C = 1 / (1 + \text{Var}(\partial_t\Phi))$$

Entropy

$$E = |\nu|^2 + |\nabla\Phi|^2$$

Multi-Zero

$$dZ_i/dt = \sum \kappa(Z_j - Z_i)$$

Energy

$$E = \int (|\partial_t\Phi|^2 + |\Phi-Z|^2) dx$$

Phase

$$C > C_c$$