Phase 16 – Onto-Cosmology & Mythic Completion  
Part 2: Nonlinear Potentials and Symbolic Attractors

Goal  
In this part, I introduce nonlinear ψ potentials that create discrete symbolic attractors.  
These potentials embed archetypal states directly into the dynamics of ψ, ensuring that symbolic structures are not just statistical residues (as in Part 1) but become dynamical fixed points of the ψ field itself.

Setup  
The ψ-gravity framework remains anchored in the core equation:

Plain text: Gravity(x) = (nabla^2[space(x) + current(x)^2]) \* psi(x)

Now, I extend the ψ framework by adding a nonlinear potential , shaping the global symbolic landscape.

Nonlinear Potential Form

I define:

Plain text: V(psi) = alpha psi^4 - beta psi^2 + sum\_n gamma\_n cos(lambda\_n psi)

Interpretation:

* The quartic + quadratic terms create symmetry-breaking double wells.
* The cosine terms add periodic attractors, representing archetypal symbolic states.
* ψ field tends to settle into one of these minima, encoding symbolic archetypes cosmologically.

Archetypal States

* Quartic wells (±ψ₀): correspond to binary archetypes (light/dark, order/chaos).
* Cosine attractors: correspond to cyclic myths (eternal return, seasons, renewal).
* Superpositions: lead to emergent archetypes (trickster, hero’s journey).

Thus ψ evolves as a field with mythic attractor basins.

Desert Analogy

* ψ = desert floor, but now shaped with valleys and ridges (potential wells).
* The dunes (forces) are no longer random but guided into preferred mythic patterns.
* Currents (winds) push sand into these valleys, ensuring stability of symbolic structures.

This analogy captures how ψ enforces archetypal stability in the cosmos.

Dynamical Equation

The ψ field evolves under:

Plain text: psi\_ddot - nabla^2 psi + dV/dpsi = 0

With:

Plain text: dV/dpsi = 4 alpha psi^3 - 2 beta psi - sum\_n gamma\_n lambda\_n sin(lambda\_n psi)

The derivative introduces nonlinear restoring forces toward symbolic attractors.

Simulation Concept

# simulations/phase16\_part2\_symbolic\_attractors.py  
import numpy as np  
import matplotlib.pyplot as plt  
  
# Parameters  
alpha, beta = 1.0, 2.0  
gamma, lam = [0.5], [2.0]  
  
# Define potential  
def V(psi):  
 base = alpha\*psi\*\*4 - beta\*psi\*\*2  
 periodic = sum(g\*np.cos(l\*psi) for g,l in zip(gamma,lam))  
 return base + periodic  
  
def dV\_dpsi(psi):  
 base = 4\*alpha\*psi\*\*3 - 2\*beta\*psi  
 periodic = sum(-g\*l\*np.sin(l\*psi) for g,l in zip(gamma,lam))  
 return base + periodic  
  
# Grid for visualization  
psi\_vals = np.linspace(-3,3,500)  
V\_vals = V(psi\_vals)  
  
plt.plot(psi\_vals, V\_vals)  
plt.title("Symbolic Attractor Potential V(ψ)")  
plt.xlabel("ψ")  
plt.ylabel("V(ψ)")  
plt.grid()  
plt.show()

Code Summary This code plots the potential landscape, showing symbolic attractor minima. Archetypal wells appear as discrete dips in the potential, where ψ tends to stabilize.

Insights

* ψ potential minima serve as cosmic archetype anchors.
* Symbolic meaning is now hard-coded into the field dynamics, not emergent only from fluctuations.
* ψ thereby unifies:
  + Metric geometry (from Part 1).
  + Symbolic attractors (from Part 2).
* Together, they form a dual encoding: geometry + meaning.

Assumptions

* ψ potentials are phenomenological, not derived from microphysics.
* Archetypal states correspond to minima, but transitions (tunneling, thermal kicks) are possible.
* No explicit coupling to matter fields yet (saved for Part 3 backreaction).

Output of Part 2

* Constructed nonlinear ψ potential embedding symbolic archetypes.
* Established attractor states corresponding to mythic-symbolic patterns.
* ψ field dynamics ensure symbolic stability across cosmological scales.
* Prepared ground for backreaction analysis in Part 3, where particle clustering and ψ dynamics feed into cosmology.

Next Steps

* Proceed to Part 3: Backreaction and Mythic Cosmology Integration.
* This will show how ψ, matter, and symbolic attractors co-evolve, completing the cosmological-mythic arc.