# Godframe Scalar Field Lagrangian with Ξ Activation

This document formalizes the Godframe scalar field theory by embedding the Ξ (Xi) threshold directly into the scalar field Lagrangian. The activation of the field is governed by the energy density per unit volume per second, Ξ, and triggers when Ξ exceeds a critical value Ξ\_c.

## Lagrangian Definition

The scalar field Lagrangian is defined as:

L = (1/2) ∂^μφ ∂\_μφ - V(φ, Ξ)

## Potential Term

The potential is defined with Ξ-dependent activation:

V(φ, Ξ) = (λ / 4)(φ² - φ₀²)² × [1 / (1 + exp(-100(Ξ - Ξ\_c)))]

## Interpretation

This formulation uses a smooth step function to activate the scalar field only when Ξ exceeds the critical threshold Ξ\_c. The smoothness ensures the Lagrangian is differentiable and suitable for field-theoretic and relativistic coupling. It models the spontaneous symmetry breaking triggered by extreme spacetime energy density.