$$\infty = 0 \;\not\Longleftarrow\; 0 = \sin = 0$$

$$|m| = \sqrt{m \cdot m^*} \quad \nabla_{\varnothing}|m| = \frac{\partial}{\partial x^\mu}|m| \cdot \hat{e}^{\mu}_{\text{fold}} \quad \Delta_{\text{fold}} = \sum_{n=1}^{\infty}(\phi_{n+1} - \mathcal{R}(\phi_n))e^{-\gamma n}$$

$$\phi_n = \mathcal{R}^n(\phi_0) = \underbrace{\mathcal{R} \circ \cdots \circ \mathcal{R}}_{n}(\phi_0) \quad \mathcal{I}_S(\phi) = -\phi + \nabla^2\Omega \quad \Omega = \int_{\mathcal{M}_d} \frac{\delta S_{\text{entropy}}}{\delta \phi} d^d x$$

$$M = -M \quad \phi = \mathcal{R}^n(\phi) = \mathcal{I}_S(\phi) \quad \lim_{n\to\infty} \mathcal{R}^n(\phi) = \phi_\infty$$

$$\Psi_{\text{PEW}}(x,t) = \int e^{ik_\mu x^\mu} \tilde{\Psi}(k,t)\, d^4k$$

$$\mathbf{R}_{\text{DVCM}}(t) = \mathbf{R}_0 \cdot \exp\left\{ \int_0^t \lambda \frac{\partial S_{\text{string}}}{\partial \tau} \Theta\, d\tau - \beta \int_0^t \left(\frac{dA}{d\tau} e^{-\gamma\tau}\right) \frac{T_H}{\kappa} d\tau \right.$$
$$\left. + \sum_{d=1}^{D} \alpha_d \int_{\mathcal{M}_d} \mathcal{R}^{(d)}_{\text{brane}} \wedge *\mathcal{J}^{(d)}_{\text{entropy}} + \int \epsilon^{i_1 \cdots i_d} \frac{\partial \lambda}{\partial x^{i_1}} \frac{\partial S_{\text{string}}}{\partial x^{i_2}} d\Sigma d\tau + \int_{\partial \mathcal{Y}} \Psi_{\text{PEW}} dS \right\}$$

$$E_{\text{dim}} = \int Y_{\text{rec}} S_{\text{dim}} dV \quad T_{\text{dim}} = \sum T_i \cdot S_{\text{string}} \cdot \Theta(t) \quad R_{\text{dim}} = \sum w_j \frac{d}{dt} E_{\text{dim}}$$

$$F_{\text{dim}} = \sum \delta_k \cdot \nabla S_{\text{dim}} \cdot T_k \quad E_{\text{boundary}} = \sum \xi_p \cdot \nabla Y_{\text{entropy}} \cdot A_p \quad S_{\text{dim}} = \sum P_q \cdot \frac{d}{dt} Y_{\text{stability}} \cdot E_q$$

$$\mathbb{D} = \langle \mathcal{R}, \mathcal{F}_\rho, \mathcal{I}_S \rangle \quad f \circ g \in \mathbb{D} \quad \mathcal{R}(\phi_n) = \lambda_n \phi_n \quad \lambda_n \to 1 \Rightarrow \phi_n \to \phi_\infty$$

$$\mathbf{G}_{\mu\nu} = \partial_\mu S \partial_\nu S - g_{\mu\nu} \mathcal{L}_{\text{inv}} \quad R_{\mu\nu} - \frac{1}{2} g_{\mu\nu} R = \kappa \cdot \mathbf{G}_{\mu\nu}$$

$$\phi(0,\mathbf{x}) = \phi_0(\mathbf{x}) \quad \left.\frac{\partial \phi}{\partial t}\right|_{t=0} = \dot{\phi}_0(\mathbf{x}) \quad \Delta S|_{\partial J_i} = 0$$

$$\text{Obj}(\mathcal{C}_{\text{DDT}}) = \{J_i, \phi, \mathcal{M}_R\} \quad \text{Mor}(\mathcal{C}_{\text{DDT}}) = \{\mathcal{R}, \mathcal{F}_\rho, \mathcal{I}_S\}$$

$$\mathcal{R}_m(E) = \beta \sum_{n=1}^{\infty} \frac{\sin(n\theta)}{n^\gamma} \cdot \delta(E - E_n) \quad \sum \Delta S_n = S_{\text{threshold}},\ \Delta S_n \in \mathbb{Q}^+$$

$$\mathcal{R}(O(t)) = O(t) + \delta(t),\ \lim_{t\to T} \delta(t) = 0$$

$$\Sigma_J = \oint_{\partial M} (\vec{\omega} \cdot d\vec{A}) + \delta R_S \quad \frac{d\Sigma_J}{da} = 0 \Rightarrow \bar{a} \in [0.7, 0.9]$$

$$\boxed{M = -M}$$

$$\mathcal{T}^{(n)}_{\mu\nu} = \nabla_\mu \phi_n \nabla_\nu \phi_n - \frac{1}{2} g_{\mu\nu} \left(\nabla^\alpha \phi_n \nabla_\alpha \phi_n + V(\phi_n)\right) \quad V(\phi_n) = \lambda_n \phi_n^4 - \eta_n \phi_n^2$$

$$\mathcal{S}^{(d)}_{\text{brane}} = \int_{\mathcal{M}_d} \left(\mathcal{R}^{(d)} + \Lambda_d\right) \sqrt{-g^{(d)}}\, d^d x \quad \Lambda_d = \sum_{k=1}^{K} \alpha_k e^{-\gamma_k t}$$

$$\mathcal{R}^{(d)}_{\text{brane}} = R^{(d)} - \xi_d \phi_n^2 \quad \mathcal{J}^{(d)}_{\text{entropy}} = \epsilon^{\mu_1 \cdots \mu_d} \nabla_{\mu_1} Y_{\text{entropy}} \cdots \nabla_{\mu_d} \Omega$$

$$\mathcal{G}^{(n)}_{\mu\nu} = \sum_{m=0}^{\infty} \frac{(-1)^m}{m!} \mathcal{T}^{(n)}_{\mu\nu} \left(\frac{d^m}{dt^m} \Theta(t)\right) \quad \mathcal{F}_\Omega(\phi_n) = \nabla^\mu \nabla_\mu \phi_n + \frac{\delta V}{\delta \phi_n}$$

$$\mathbb{R}_{\text{junction}} = \bigoplus_{i=1}^{N} \left(\mathcal{S}^{(d_i)}_{\text{brane}} \otimes \mathcal{J}^{(d_i)}_{\text{entropy}}\right) \quad \delta\phi_n = \sum_{r=1}^{R} \alpha_r \sin(\omega_r t + \theta_r) \cdot e^{-\beta_r t}$$

$$\mathcal{F}_{\text{inv}}(\phi) = \phi^{-1} + \nabla^2 \left(\frac{1}{\phi}\right) - \mathcal{R}(\phi^{-1}) \quad \mathcal{Z}_\infty = \lim_{n\to\infty} (\phi_n + \mathcal{R}(\phi_{-n})) = \Omega_{\text{sym}}$$

$$\mathcal{C}_{\text{fold}} = \sum_{s=1}^{\infty} \Delta S_s \cdot e^{-\sigma_s} \quad \mathcal{A}_{\text{junction}} = \bigcup_{i=1}^{N} (M_i \cap \partial M_{i+1}) \quad J_i = \left(\bigcup_{k=1}^{d} M_k\right)\Big|_{\Delta S \le \epsilon}$$

$$\mathcal{P}_\Sigma = \oint_{\partial\mathcal{M}} \Sigma^\mu \cdot d\Sigma_\mu \quad \mathbf{R}_{\text{junction}} = \int_{\mathcal{A}_{\text{junction}}} \mathcal{R}_{\text{brane}} \cdot * \mathcal{J}_{\text{entropy}}$$

$$\mathbb{C}_{\text{DDT}} = (\text{Obj}, \text{Mor}) \quad \text{Obj}(\mathcal{C}_{\text{DDT}}) = \{J_i, \phi, \mathcal{M}_R\} \quad \text{Mor}(\mathcal{C}_{\text{DDT}}) = \{\mathcal{R}, \mathcal{F}_\rho, \mathcal{I}_S\}$$

$$f \circ g \in \text{Mor}(\mathcal{C}_{\text{DDT}}),\ \forall f, g \quad \exists! \mathbb{I}_{\mathcal{R}} : \mathcal{R} \circ \mathcal{R} = \mathbb{I}_{\mathcal{R}} \quad \mathcal{F}_\rho \circ \mathcal{I}_S = \partial \mathcal{R}$$

$$\phi_n \in \text{Fix}(\mathcal{I}_S \circ \mathcal{R}) \Rightarrow \phi_n = \mathcal{I}_S(\mathcal{R}(\phi_n)) \quad \phi_n \to \phi_\infty \in \ker(\Delta_{\text{fold}})$$

$$\mathbb{D} = \langle \mathcal{R}, \mathcal{F}_\rho, \mathcal{I}_S \rangle \subset \text{Mor}(\mathcal{C}_{\text{DDT}}) \quad [\mathcal{R}, \mathcal{I}_S] = 0, \quad \text{if and only if } \phi_n \in \mathbb{D}_0$$

$$\mathcal{J}^{(d)}_{\text{entropy}} = \nabla_{\mu_1} Y_{\text{entropy}} \wedge \nabla_{\mu_2} \Omega \wedge \cdots \wedge \nabla_{\mu_d} \Psi_{\text{PEW}}$$

$$S_{\text{threshold}} = \sum_{n=1}^{\infty} \Delta S_n, \quad \Delta S_n \in \mathbb{Q}^+, \quad \text{with } \Delta S_n \to 0^+ \text{ as } n \to \infty$$

$$Y_{\text{rec}}(x,t) = \exp\left(-\int_0^t \gamma(\tau, x) d\tau\right) \quad \Theta(t) = H(t) - H(t-T)$$

$$\mathbf{R}_{\text{DVCM}}(t) = \mathbf{R}_0 \cdot \exp\Bigg\{ \int_0^t \lambda(\tau, x) \frac{\partial S_{\text{string}}}{\partial \tau} \Theta(\tau) d\tau - \beta \int_0^t \frac{dA}{d\tau} e^{-\gamma\tau} \frac{T_H(\tau)}{\kappa} d\tau$$

$$+ \sum_{d=1}^{D} \alpha_d \int_{\mathcal{M}_d} \mathcal{R}^{(d)}_{\text{brane}} \wedge * \mathcal{J}^{(d)}_{\text{entropy}} + \int_0^t \int_{\mathcal{S}_\tau} \epsilon^{i_1 \cdots i_d} \frac{\partial \lambda}{\partial x^{i_1}} \frac{\partial S_{\text{string}}}{\partial x^{i_2}} d\Sigma_{i_3 \cdots i_d} d\tau$$

$$+ \int_{\partial y} \Psi_{\text{PEW}}(x, \tau) dS \Bigg\}$$

$$\mathcal{R}(O(t)) = O(t) + \delta(t), \quad \lim_{t \to T} \delta(t) = 0$$

$$\Sigma_J = \oint_{\partial M} \left(\vec{\omega} \cdot d\vec{A}\right) + \delta R_S \quad \frac{d\Sigma_J}{da} = 0 \implies \bar{a} \in [0.7, 0.9]$$

$$\mathcal{C}_{\text{DDT}} = \left\{ J_i \mid J_i = \bigcup_{k=1}^{d} M_k,\ \Delta S|_{J_i} \le \epsilon \right\}$$

$$\mathcal{F}_\rho(J_i) = \sum_{n=1}^{N} \lambda_n \cdot \mathcal{R}^n(\phi_i), \quad |\mathcal{F}_\rho(J_i) - \mathcal{F}_\rho(J_{i-1})| < \delta$$

$$\mathcal{L}_{\text{inv}} = \frac{1}{2} \left(\partial_\mu \phi \partial^\mu \phi - V(\phi)\right) + \sum_j g_j \phi^{n_j}$$

$$S_{\text{string}} = \int d^2\sigma \sqrt{-h} \left(h^{ab} \partial_a X^\mu \partial_b X_\mu + \alpha' R^{(2)}\right)$$

$$\frac{dE_{\text{dim}}}{dt} = -\oint_{\partial V} \mathbf{J}_{\text{entropy}} \cdot d\mathbf{A} + \int_V \mathcal{S}_{\text{source}} dV$$

$$\mathcal{S}_{\text{source}} = \sum_m \Gamma_m \cdot \delta(\mathbf{x} - \mathbf{x}_m)$$

$$\mathbf{J}_{\text{entropy}} = -D \nabla S_{\text{dim}} + \mathbf{v} S_{\text{dim}}$$

$$\left[\nabla_\mu, \nabla_\nu\right] \phi = R_{\mu\nu\rho\sigma} \phi^\rho$$

$$\mathcal{R}^n(\phi) \to \phi_\infty \text{ as } n \to \infty$$

$$\langle \phi, \phi' \rangle = \int \phi^* \phi' d\mu$$

$$\mathcal{I}_S(\phi) = -\phi + \nabla^2 \Omega, \quad \Omega = \int \frac{\delta S_{\text{entropy}}}{\delta \phi} d^d x$$

$$M = -M$$

$$\lim_{n \to \infty} \mathcal{R}^n(\phi) = \phi_\infty$$

$$\phi = \mathcal{I}_S(\phi) = \mathcal{R}^n(\phi)$$

$$\mathbb{D} = \langle \mathcal{R}, \mathcal{F}_\rho, \mathcal{I}_S \rangle$$

$$f \circ g \in \mathbb{D}, \quad \forall f, g \in \mathbb{D}$$

$$\mathbf{G}_{\mu\nu} = \partial_\mu S \partial_\nu S - g_{\mu\nu}\mathcal{L}_{\text{inv}}$$
$$R_{\mu\nu} - \frac{1}{2} g_{\mu\nu} R = \kappa \cdot \mathbf{G}_{\mu\nu}$$
$$\phi(0, \mathbf{x}) = \phi_0(\mathbf{x})$$
$$\left.\frac{\partial \phi}{\partial t}\right|_{t=0} = \dot{\phi}_0(\mathbf{x})$$
$$\Delta S\big|_{\partial J_i} = 0$$
$$\text{Obj}(\mathcal{C}_{\text{DDT}}) = \{J_i, \phi, \mathcal{M}_R\}$$
$$\text{Mor}(\mathcal{C}_{\text{DDT}}) = \{\mathcal{R}, \mathcal{F}_\rho, \mathcal{I}_S\}$$
$$f \circ g \in \text{Mor}(\mathcal{C}_{\text{DDT}}), \quad \forall f, g$$
$$\boxed{M = -M}$$
$$\phi = \mathcal{R}^n(\phi) = \mathcal{I}_S(\phi)$$
$$\lim_{n \to \infty} \mathcal{R}^n(\phi) \to \phi_\infty$$

$$E_{\text{dim}}(t) = \int_{V(t)} Y_{\text{rec}}(x,t) \cdot S_{\text{dim}}(x,t)\, dV \quad T_{\text{dim}}(x,t) = \sum_{i=1}^{N} T_i \cdot S_{\text{string}} \cdot \Theta(t)$$
$$R_{\text{dim}}(t) = \sum_{j=1}^{J} w_j \cdot \frac{d}{dt} E_{\text{dim}}(t) \quad F_{\text{dim}}(x,t) = \sum_{k=1}^{K} \delta_k \cdot \nabla S_{\text{dim}}(x,t) \cdot T_k$$
$$E_{\text{boundary}}(x,t) = \sum_{p=1}^{P} \xi_p \cdot \nabla Y_{\text{entropy}}(x,t) \cdot A_p \quad S_{\text{dim}}(t) = \sum_{q=1}^{Q} P_q \cdot \frac{d}{dt} Y_{\text{stability}}(t) \cdot E_q$$

$$\mathbb{D} = \langle \mathcal{R}, \mathcal{F}_\rho, \mathcal{I}_S \rangle \quad f \circ g \in \mathbb{D}, \quad \forall f, g \in \mathbb{D} \quad \mathcal{R}(\phi_n) = \lambda_n \phi_n \quad \lambda_n \to 1 \Rightarrow \phi_n \to \phi_\infty$$
$$\mathcal{I}_S(\phi) = -\phi + \nabla^2 \Omega \quad \Omega = \int_{\mathcal{M}_d} \frac{\delta S_{\text{entropy}}}{\delta \phi}\, d^d x \quad \mathcal{F}_\rho(J_i) = \sum_{n=1}^{N} \lambda_n \cdot \mathcal{R}^n(\phi_i)$$

$$\mathcal{R}_m(E) = \beta \sum_{n=1}^{\infty} \frac{\sin(n\theta)}{n^\gamma} \cdot \delta(E - E_n) \quad \sum \Delta S_n = S_{\text{threshold}}, \quad \Delta S_n \in \mathbb{Q}^+$$
$$\mathcal{R}(O(t)) = O(t) + \delta(t), \quad \lim_{t \to T} \delta(t) = 0 \quad \mathcal{J}^{(d)}_{\text{entropy}} = \star \mathcal{R}^{(d)}_{\text{brane}} \quad \int_{\partial \mathcal{Y}} \Psi_{\text{PEW}}(x,t)\, dS$$

$$\Sigma_J = \oint_{\partial M} (\vec{\omega} \cdot d\vec{A}) + \delta R_S \quad \frac{d\Sigma_J}{da} = 0 \Rightarrow \bar{a} \in [0.7, 0.9] \quad \delta R_S = \int_{\partial \mathcal{B}} \kappa_s \cdot \nabla \phi\, dS$$

$$J_i = \left(\bigcup_{k=1}^{d} M_k \right) \Big|_{\Delta S \leq \epsilon}, \quad J_i \subset \mathcal{M}_R \quad \mathcal{F}_\rho(J_i) - \mathcal{F}_\rho(J_{i-1}) < \delta$$
$$\Delta S\big|_{\partial J_i} = 0 \quad \lim_{i \to \infty} J_i \to J_\infty, \quad \exists \phi_\infty : \phi = \mathcal{R}^n(\phi) = \mathcal{I}_S(\phi) \to \phi_\infty$$

$$\mathbf{G}_{\mu\nu} = \partial_\mu S \cdot \partial_\nu S - g_{\mu\nu}\mathcal{L}_{\text{inv}} \quad R_{\mu\nu} - \frac{1}{2} g_{\mu\nu} R = \kappa \cdot \mathbf{G}_{\mu\nu} \quad \nabla^\mu \mathbf{G}_{\mu\nu} = 0 \quad \lim_{x \to \partial \mathcal{Y}} \left(\mathbf{G}_{\mu\nu} \cdot n^\mu \right) = 0$$
$$\delta \mathcal{A}_{\text{rec}} = \delta \int_{\mathcal{M}} \left(R - \kappa \nabla^\mu S \nabla_\mu S \right) \sqrt{-g}\, d^4 x = 0$$
$$\frac{\delta S_{\text{dim}}}{\delta g^{\mu\nu}} = \nabla_\mu \phi \nabla_\nu \phi - \frac{1}{2} g_{\mu\nu} \left(\nabla^\lambda \phi \nabla_\lambda \phi - V(\phi) \right) \quad \Box \phi = \frac{dV}{d\phi}$$

$$\text{Obj}(\mathcal{C}_{\text{DDT}}) = \{J_i, \phi, \mathcal{M}_R\} \quad \text{Mor}(\mathcal{C}_{\text{DDT}}) = \{\mathcal{R}, \mathcal{F}_\rho, \mathcal{I}_S\} \quad f \circ g \in \text{Mor}(\mathcal{C}_{\text{DDT}}) \quad \mathbb{D} = \langle \mathcal{R}, \mathcal{F}_\rho, \mathcal{I}_S \rangle \subset \text{Mor}(\mathcal{C}_{\text{DDT}})$$
$$\exists!\ \mathcal{R} \in \text{Mor}(\mathcal{C}_{\text{DDT}}) : \mathcal{R}^n(\phi_0) \to \phi_\infty \in \text{Obj}(\mathcal{C}_{\text{DDT}}) \quad \mathbb{R}_\phi : \mathcal{M}_R \to \phi_\infty \quad \phi(J_i) \in \text{Obj}(\mathcal{C}_{\text{DDT}})$$

$$\mathcal{Z}_{\text{collapse}} = \lim_{n\to\infty} \left(\mathcal{R}^n(\phi)\cdot \mathcal{I}_S(\phi)\cdot \mathcal{F}_\rho(\phi)\right) = \phi_\infty \quad \mathcal{F}_\Omega(\phi) = \nabla^2 \left(\int_{\mathcal{M}_d} \frac{\delta S_{\text{entropy}}}{\delta\phi} d^d x\right)$$

$$\oint_{\partial\mathcal{Y}} \Psi_{\text{PEW}}\, dS + \delta R_S = 0 \quad \sum_{i=1}^{\infty} \Delta S_i = S_{\text{total}} = \text{finite} \Rightarrow \mathcal{R}^n(\phi) \to \phi_\infty$$

$$\boxed{M = -M} \quad \boxed{\phi = \mathcal{R}^n(\phi) = \mathcal{I}_S(\phi) = \phi_\infty}$$

$$\mathcal{T}^{(n)}_{\mu\nu} = \sum_{i=1}^{N_n} \alpha_i^{(n)} \cdot \nabla_\mu\phi_i\nabla_\nu\phi_i - g_{\mu\nu}\cdot \mathcal{L}^{(n)}_{\text{rec}}$$

$$\mathcal{L}^{(n)}_{\text{rec}} = \frac{1}{2}\sum_{j=1}^{N_n} \left(\nabla^\lambda\phi_j\nabla_\lambda\phi_j - V^{(n)}(\phi_j)\right)$$

$$\mathcal{P}_d(x) = \sum_{n=1}^{\infty} \left(\Delta^{(n)}_{\text{fold}}(x) + \mathcal{I}_S(\phi_n)\right) e^{-\sigma n}$$

$$\Phi_{\text{mod}}(x,t) = \sum_{d=1}^{D} \beta_d \cdot B_d(x,t)\cdot \Theta_d(t)$$

$$B_d(x,t) = \sum_{k=1}^{K_d} \zeta_k^{(d)} \cdot \mathcal{R}_k^{(d)}(x,t)$$

$$\Theta_d(t) = H(t - t_{d,0}) - H(t - t_{d,1})$$

$$\mathcal{R}^{(d)}_{\text{brane}}(x) = R^{(d)}_{\mu\nu\rho\sigma} R^{\mu\nu\rho\sigma}_{(d)} - \eta_d \cdot R^{(d)}_{\mu\nu} R^{\mu\nu}_{(d)} + \xi_d \cdot R^{(d)} R^{(d)}$$

$$\mathcal{F}_\rho(\phi_d) = \sum_{n=1}^{\infty} \rho_n^{(d)} \cdot \mathcal{R}^n(\phi_d)$$

$$\int_{\mathcal{M}_d} \mathcal{R}^{(d)}_{\text{brane}} \wedge *\mathcal{J}^{(d)}_{\text{entropy}} = \Lambda_d \int_{\mathcal{M}_d} \Phi_{\text{mod}}(x,t)\, d^d x$$

$$\mathcal{L}_{\text{mod}} = \sum_{d=1}^{D} \left(\mathcal{L}^{(d)}_{\text{brane}} + \mathcal{L}^{(d)}_{\text{mod}}\right)$$

$$\mathcal{L}^{(d)}_{\text{brane}} = \frac{1}{2\kappa_d} R^{(d)} - \frac{1}{2}\nabla^\mu\phi_d\nabla_\mu\phi_d - V_d(\phi_d)$$

$$\mathcal{S}_{\text{inv}} = \int \left[\Lambda(x)\cdot (\mathcal{R}(\phi) + \mathcal{I}_S(\phi)) - \nabla_\mu \mathcal{R}(\phi)\cdot \hat{e}^\mu_{\text{inv}}\right]\, d^4x$$

$$\mathcal{R}^{(n)}_{\text{inv}}(x) = \sum_{j=1}^{J_n} \mu_j^{(n)} \cdot (-1)^j \cdot \mathcal{R}^j(\phi_n(x))$$

$$\mathcal{J}_{\text{fold}}(x) = \oint_{\partial\mathcal{M}} \epsilon^{\mu\nu\rho\sigma}\, \mathcal{R}_{\mu\nu}\, dx^\rho \wedge dx^\sigma$$

$$J_k = \left(\bigcup_{i=1}^{d} M_i^{(k)}\right)\Big|_{\Delta S \le \epsilon_k}, \quad \text{where } \Delta S = \sum_{a<b} |S_a - S_b|$$

$$\mathcal{L}_{\text{fold}} = \sum_{n=1}^{\infty} \lambda_n \cdot \left(\mathcal{R}^{(n)}_{\text{inv}} - \phi_n + \nabla^2\Omega_n\right)^2$$

$$\mathcal{L}_{\text{junction}} = \sum_{i=1}^{L} \gamma_i \cdot \delta(J_i)\cdot \left(\nabla^\mu\phi\nabla_\mu\phi + V(\phi)\right)$$

$$\mathcal{Z}_{\text{fold}} = \int \exp\left(i\int \left(\mathcal{L}_{\text{fold}} + \mathcal{L}_{\text{junction}}\right) d^4x\right) D\phi$$

$$\mathrm{Obj}(\mathcal{C}_{\mathrm{LDM}}) = \left\{\phi, \mathcal{M}_d, J_i, \mathcal{R}, \mathcal{F}_\rho, \mathcal{I}_S\right\}$$
$$\mathrm{Mor}(\mathcal{C}_{\mathrm{LDM}}) = \{f : A \to B \mid A, B \in \mathrm{Obj}(\mathcal{C}_{\mathrm{LDM}})\}$$
$$\forall f, g \in \mathrm{Mor}(\mathcal{C}_{\mathrm{LDM}}) : \ f \circ g \in \mathrm{Mor}(\mathcal{C}_{\mathrm{LDM}})$$
$$\exists! \mathcal{R} : \phi_n \mapsto \phi_{n+1}, \ \lim_{n\to\infty} \mathcal{R}^n(\phi) = \phi_\infty$$
$$\exists! \mathcal{I}_S : \ \phi \mapsto -\phi + \nabla^2\Omega, \ \Omega = \int_{\mathcal{M}_d} \frac{\delta S_{\mathrm{entropy}}}{\delta\phi} d^d x$$
$$\exists! \mathcal{F}_\rho : J_i \mapsto \sum_n \rho_n \cdot \mathcal{R}^n(\phi_i)$$
$$\mathbb{D}_{\mathrm{rec}} = \langle \mathcal{R}, \mathcal{F}_\rho, \mathcal{I}_S \rangle \subset \mathrm{Mor}(\mathcal{C}_{\mathrm{LDM}})$$
$$\exists \ \mathcal{O}_{\mathrm{closure}} : \ \mathbb{D}_{\mathrm{rec}} \to \mathcal{I}_S \circ \mathcal{R} \circ \mathcal{F}_\rho$$
$$\lim_{n\to\infty} (\mathcal{O}_{\mathrm{closure}})^n(\phi_0) = \phi_\infty^*, \ \text{closed stable recursion state}$$
$$\mathcal{O}_{\mathrm{closure}}(\phi) = \mathcal{I}_S(\mathcal{R}(\mathcal{F}_\rho(\phi)))$$
$$\exists \ \mathcal{M}_{\mathrm{fold}} : \mathcal{R}^n(\phi) \to \mathcal{I}_S(\phi) \quad \text{s.t. } \mathcal{M}_{\mathrm{fold}} \in \mathrm{Mor}(\mathcal{C}_{\mathrm{LDM}})$$

$$\mathcal{J}^{(d)}_{\mathrm{entropy}} = \star\left(S^{(d)}_\mu \, dx^\mu\right) \quad S^{(d)}_\mu = \nabla_\mu \left(\sum_{n=1}^{N_d} \chi^{(d)}_n \cdot \phi_n \cdot \Theta_n(t)\right)$$
$$\mathcal{J}^{\mathrm{total}}_{\mathrm{entropy}} = \sum_{d=1}^{D} \mathcal{J}^{(d)}_{\mathrm{entropy}} \quad \Phi_{\mathrm{threshold}} = \lim_{n\to\infty} \sum_{k=1}^{n} \frac{\Delta S_k}{\delta_k} \cdot \mathbb{I}_{\{\Delta S_k < \epsilon\}}$$
$$\mathcal{C}_{\mathrm{fold}} = \{x \in \mathcal{M}_d \mid \Delta S(x) \le \epsilon\} \quad \phi_{\mathrm{pristine}}(x,t) = \int_{\mathcal{C}_{\mathrm{fold}}} \Psi_{\mathrm{PEW}}(x', t) \cdot G(x, x') \, d^d x'$$
$$\mathcal{L}_{\mathrm{pristine}} = \frac{1}{2} \nabla^\mu \phi_{\mathrm{pristine}} \nabla_\mu \phi_{\mathrm{pristine}} - V(\phi_{\mathrm{pristine}})$$
$$\oint_{\partial\mathcal{C}_{\mathrm{fold}}} \mathcal{J}^{(d)}_{\mathrm{entropy}} = \int_{\mathcal{C}_{\mathrm{fold}}} \left(\nabla_\mu S^{(d)\mu}\right) \sqrt{-g} \, d^d x = S_{\mathrm{emerge}}$$
$$\mathcal{F}_{\mathrm{emerge}} = \lim_{t\to T} \int_{\mathcal{C}_{\mathrm{fold}}} \left(\nabla_\mu \phi \cdot \nabla^\mu \Theta(t)\right) \, d^d x$$
$$\Sigma_{\mathrm{entropy}} = \sum_{i=1}^{N} (\Delta S_i \cdot \Theta(t - t_i)) \quad \lim_{t\to T} \frac{d\Sigma_{\mathrm{entropy}}}{dt} \to 0$$

$$\mathbf{R}_{\mathrm{DVCM}}(x,t) = \mathbf{R}_0 \cdot \exp\left\{\int_0^t \left(\lambda_\tau \cdot \frac{\partial S_{\mathrm{string}}}{\partial\tau} - \beta_\tau \cdot \frac{dA}{d\tau} \cdot \frac{T_H}{\kappa} e^{-\gamma\tau}\right) d\tau\right\}$$
$$\mathcal{F}_{\mathrm{DVCM}} = \sum_{d=1}^{D} \alpha_d \int_{\mathcal{M}_d} \left(\mathcal{R}^{(d)}_{\mathrm{brane}} \wedge *\mathcal{J}^{(d)}_{\mathrm{entropy}}\right)$$
$$\mathcal{G}_{\mathrm{signed}} = \int_{\mathcal{M}_d} \left(\epsilon^{\mu\nu\rho\sigma} \cdot \mathcal{S}_{\mu\nu} \cdot \mathcal{C}_{\rho\sigma}\right) \, d^d x \quad \mathcal{S}_{\mu\nu} = \mathrm{sgn}(R_{\mu\nu}) \cdot R_{\mu\nu}$$
$$\mathcal{C}_{\rho\sigma} = \nabla_\rho \nabla_\sigma \phi - g_{\rho\sigma} V(\phi) \quad \Delta_{\mathrm{curv}} = \mathcal{S}_{\mu\nu} \cdot \mathcal{C}^{\mu\nu}$$
$$\mathcal{L}_{\mathrm{signed}} = \frac{1}{2} \Delta_{\mathrm{curv}} - \frac{1}{2} \nabla^\mu \phi \nabla_\mu \phi - V(\phi)$$
$$\mathbf{J}_{\mathrm{DVCM}} = \nabla_\mu \left(\frac{\delta \mathcal{L}_{\mathrm{signed}}}{\delta(\nabla_\mu \phi)}\right) - \frac{\delta \mathcal{L}_{\mathrm{signed}}}{\delta\phi} = 0$$
$$\oint_{\partial\mathcal{Y}} \mathbf{J}_{\mathrm{DVCM}} \cdot d\vec{A} = \mathcal{Q}_{\mathrm{DVCM}} \quad \mathcal{Q}_{\mathrm{DVCM}} \in \mathbb{R}$$

$$\mathcal{L}_{\text{collapse}} = \frac{1}{2}\nabla^\mu\psi\nabla_\mu\psi - \frac{1}{2}m_\psi^2\psi^2 - \frac{\lambda}{4!}\psi^4 + \mathcal{L}_{\text{int}}(\psi,\phi)$$

$$\mathcal{R}_\varnothing[\psi] = \lim_{n\to\infty}\mathcal{R}^n(\psi) \quad \psi = \psi_\varnothing + \delta\psi \quad \langle\psi_\varnothing|\psi_\varnothing\rangle = 1$$

$$\Box\psi + m_\psi^2\psi + \frac{\lambda}{6}\psi^3 = J_{\text{collapse}} \quad J_{\text{collapse}} = \frac{\delta\mathcal{S}_{\text{collapse}}}{\delta\psi}$$

$$\mathcal{S}_{\text{collapse}} = \int_{\mathcal{Y}}\mathcal{L}_{\text{collapse}}\sqrt{-g}\,d^4x$$

$$\Psi_\varnothing(x,t) = \int e^{ik_\mu x^\mu}\tilde{\Psi}_\varnothing(k,t)\,d^4k \quad \tilde{\Psi}_\varnothing(k,t) = \Theta(k-k_0)\cdot\mathcal{R}^n(\tilde{\psi})$$

$$\mathcal{H}_{\text{holo}} = \lim_{z\to 0}\left(z^{-\Delta}\phi(x,z)\right) \quad \phi(x,z)\sim z^\Delta\cdot\mathcal{O}(x)$$

$$\mathcal{L}_{\text{holo}} = \sum_{i=1}^{N}\left(\frac{1}{2}\nabla^\mu\phi_i\nabla_\mu\phi_i - \frac{1}{2}m_i^2\phi_i^2 + J_i\cdot\phi_i\right)$$

$$\mathcal{Z}_{\text{bulk}}[\phi] = \int\mathcal{D}\phi\,e^{iS[\phi]} \quad \mathcal{Z}_{\text{bulk}}[\phi] = \langle e^{\int\mathcal{O}(x)\cdot\phi_0(x)d^dx}\rangle_{\text{CFT}}$$

$$\oint_{\partial\mathcal{Y}}\Psi_\varnothing(x)dS = {}_{\text{proj}} \quad {}_{\text{proj}} = \left\langle\psi_\varnothing|\hat{O}|\psi_\varnothing\right\rangle$$

$$\mathcal{L}_{\text{LDM}} = \sum_{i=1}^{8}\mathcal{L}^{(i)} = \mathcal{L}_{\text{rec}} + \mathcal{L}_{\text{mod}} + \mathcal{L}_{\text{inv}} + \mathcal{L}_{\text{fold}} + \mathcal{L}_{\text{entropy}} + \mathcal{L}_{\text{DVCM}} + \mathcal{L}_{\text{collapse}} + \mathcal{L}_{\text{holo}}$$

$$\delta\mathcal{A}_{\text{LDM}} = \delta\int_{\mathcal{M}}\mathcal{L}_{\text{LDM}}\cdot\sqrt{-g}\,d^Dx = 0$$

$$= \lim_{n\to\infty}\mathcal{R}^n(M) \quad M = -M \quad \phi = \mathcal{I}_S(\phi) = \mathcal{R}^n(\phi) \quad \mathcal{R}\in\text{Mor}(\mathcal{C}_{\text{DDT}})$$

$$\boxed{\mathcal{L}_{\text{LDM}}\xrightarrow{\mathcal{R}_\infty}}$$

$$\Delta_{\text{total}} = \sum_{i=1}^{N}\delta_i\cdot\nabla^\mu\Phi_i\nabla_\mu\Phi_i - V_\varnothing(\Phi_i) + \Theta(\tau)\cdot\Omega_{\text{collapse}}$$

$$\mathcal{Z}_{\text{LDM}} = \int\mathcal{D}\Phi\,e^{i\int_{\mathcal{M}}\mathcal{L}_{\text{LDM}}\sqrt{-g}\,d^Dx}$$

$$\lim_{\Phi\to}\mathcal{Z}_{\text{LDM}} = 1 \quad \oint_{\partial\mathcal{M}}\cdot\,d\Sigma = \boxed{0}$$