ED Analogues of Horizon and Cosmological Laws

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Four regimes where the ED ontology pins enough structure to yield honest, ED-native mathematical laws
In most situations, ED does not yet specify enough variables to write full dynamical equations.

But in four special regimes — where ED density is saturated, uniform, or has a fixed gradient — the ontology itself collapses the general ED diffusion law into simple, structurally meaningful analogue equations.

These are the first places where ED becomes a theory rather than a worldview.
They are the footholds from which the full ED architecture will grow.

1. Black Holes — ED Saturation (saturation case)

A black hole is a maximally saturated ED region, $\rho=\rho\mathrm{max}$. Its evaporation is governed by nonlinear diffusion across the steepest possible gradient:

> $\partial_t \rho = \nabla \cdot (M(\rho) \nabla \rho), \quad M(\rho) \to 0 \text{ as } \rho \to \rho_{\mathrm{max}}.$ >

The horizon is the boundary where the gradient is maximal but mobility is stiff. The outward diffusive flux across this layer yields an evaporation rate $dM/dt \propto -1/M2$ and a lifetime $\propto M3$, without importing Hawking's machinery.

2. Early Universe — Uniform ED (global relaxation)

In the early universe, ED density is nearly uniform, so gradients vanish and the diffusion law collapses to a pure relaxation equation:

> $d\rho/dt = -\Gamma(\rho).$ >

Cosmic expansion is the global decompression of ED; "dark energy" is the residual stiffness that prevents full relaxation. This is the ED analogue of the Friedmann equation

3. de Sitter Horizon — Constant Gradient (constant flux)

de Sitter space corresponds to a constant ED gradient, so the diffusion law reduces to a constant-flux condition:

> $\mathrm{J}_{\mathrm{dS}} = M(\rho_{\mathrm{dS}}) \,|\, \nabla \rho \,|_{\mathrm{dS}} = \text{constant}.$ >

The de Sitter temperature is the ED flux across this constant-gradient horizon.

4. Rindler / Unruh — Linear Gradient (accelerated observer)

An accelerated observer sees a linear ED gradient in their frame. With $\nabla \rho = kx$, the diffusion law collapses to:

> $\partial_t \rho = M(\rho)\, k.$ >

The Unruh temperature is the ED flux generated by this acceleration-induced gradient.