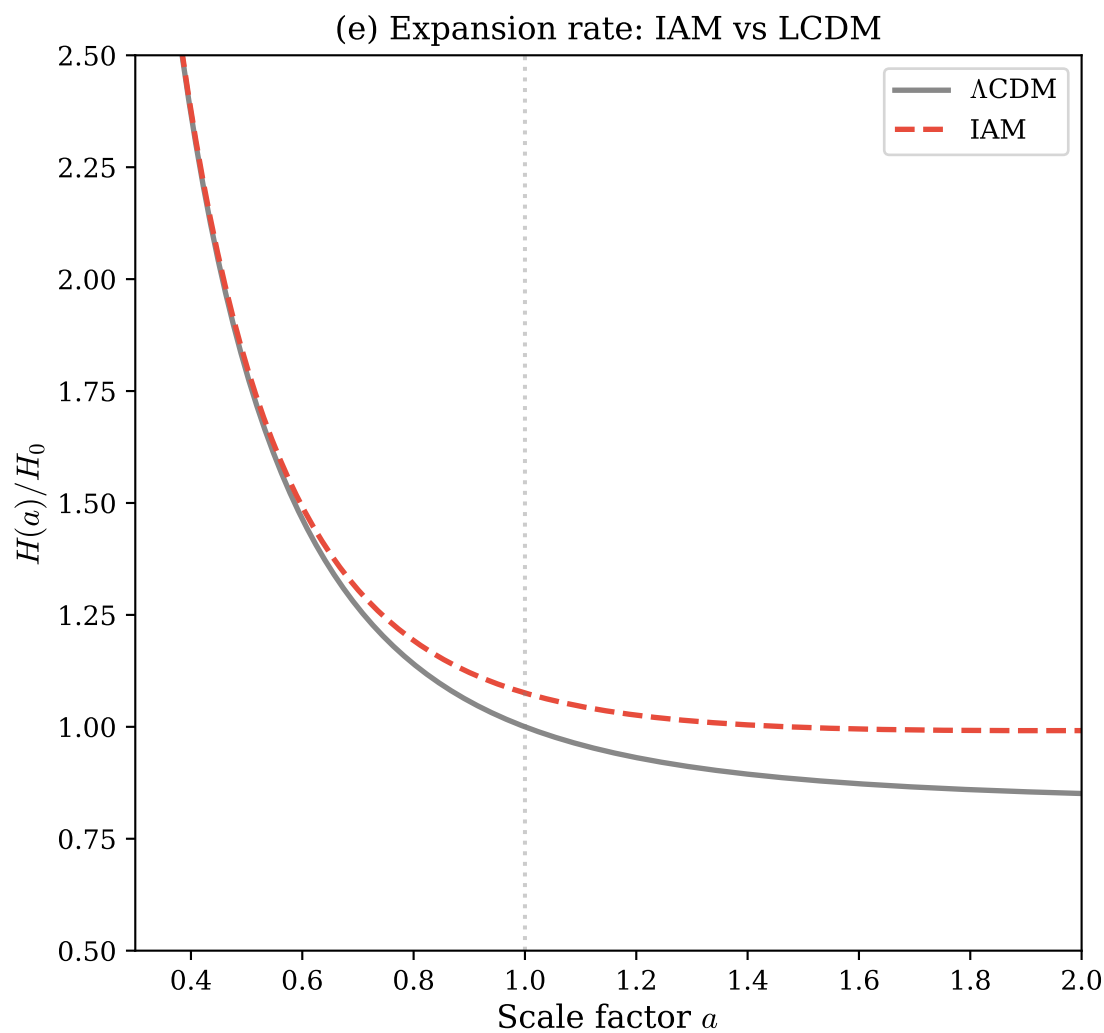
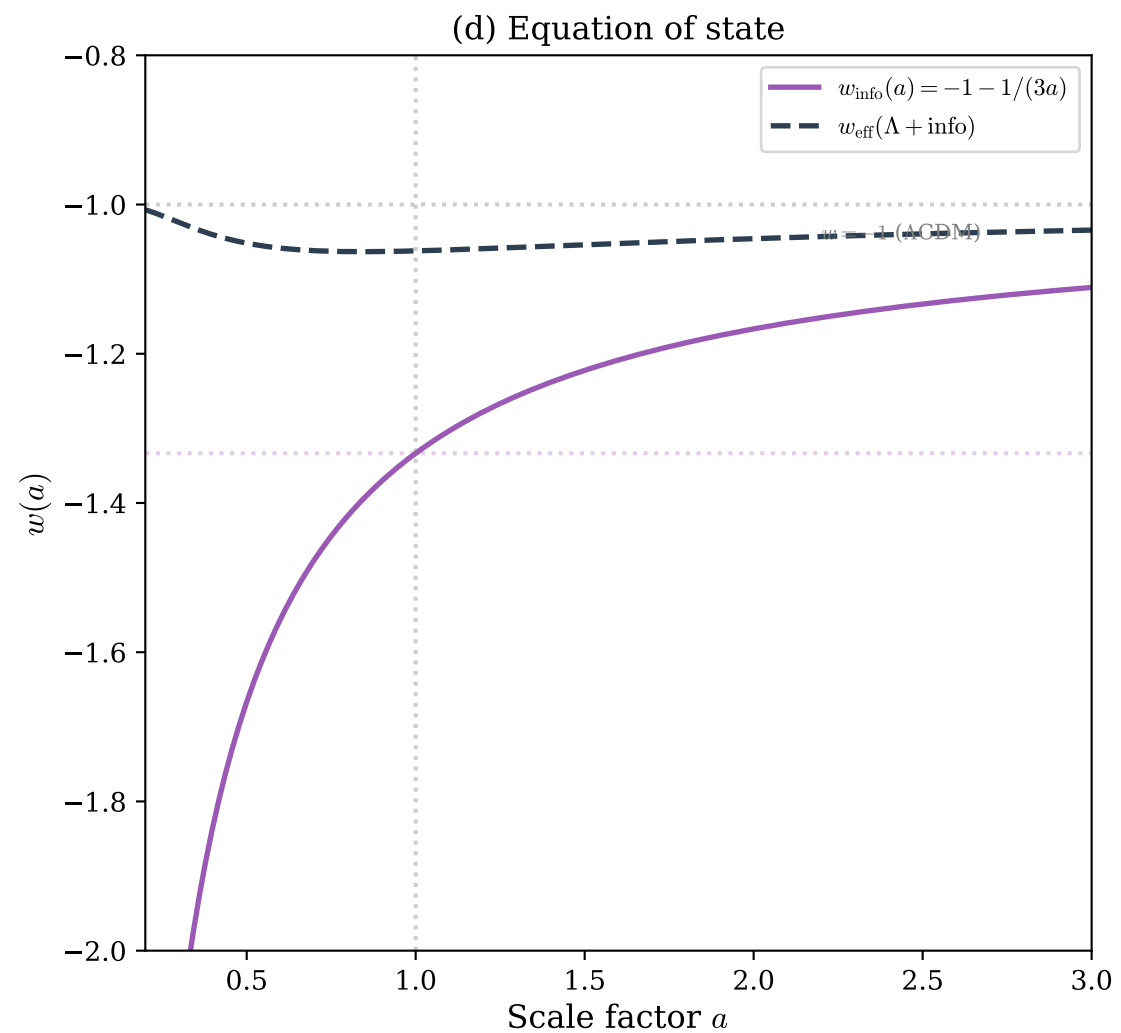
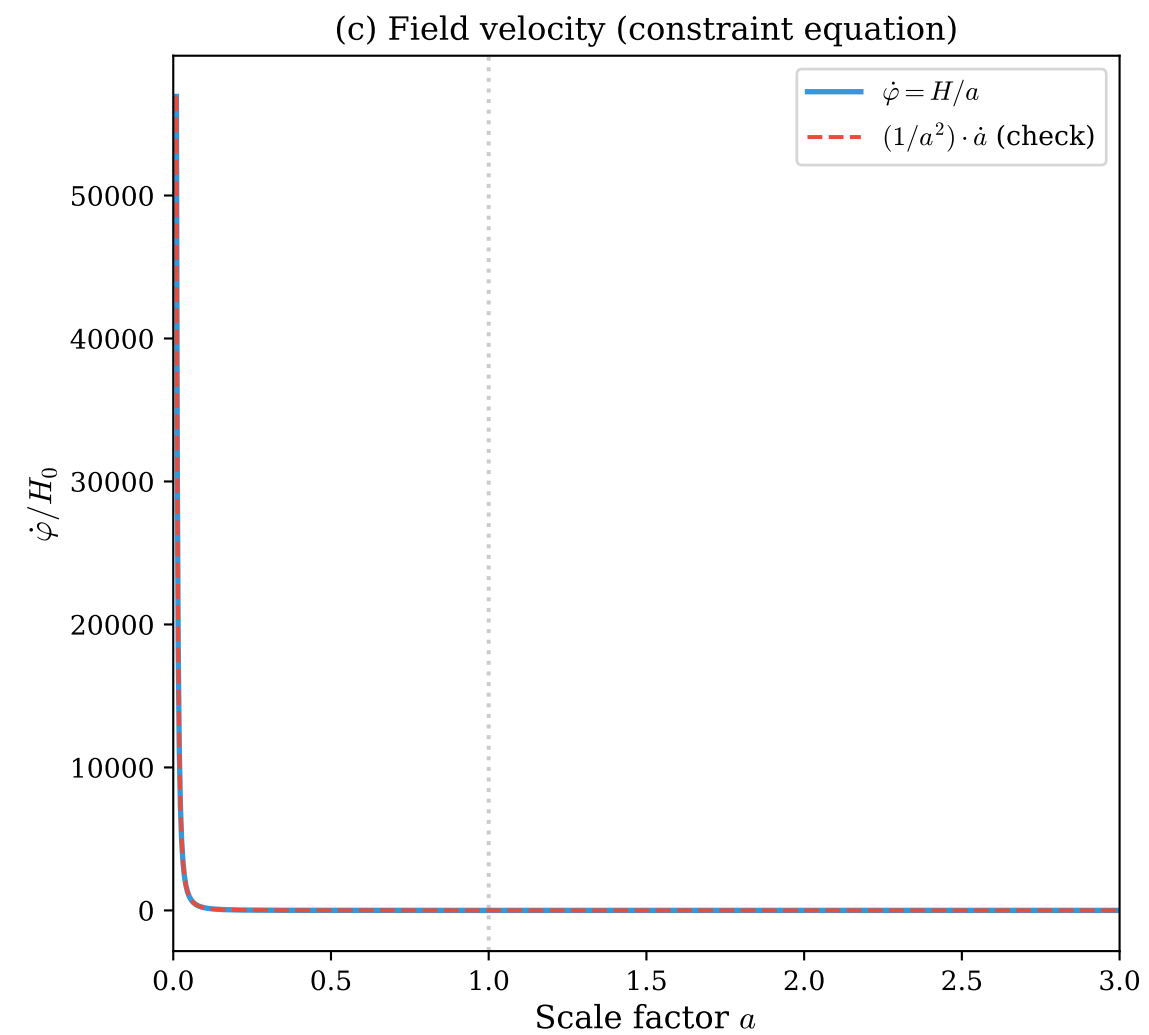
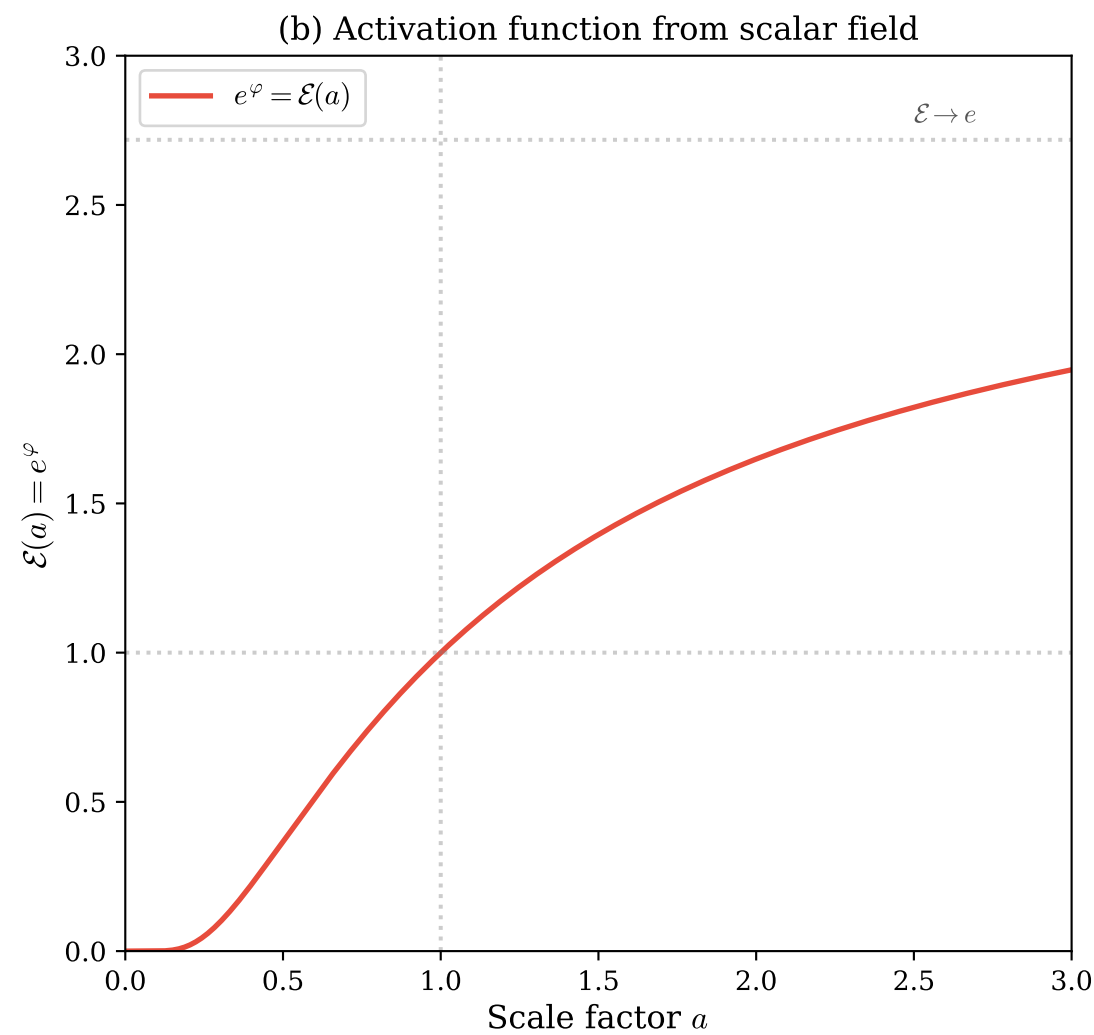
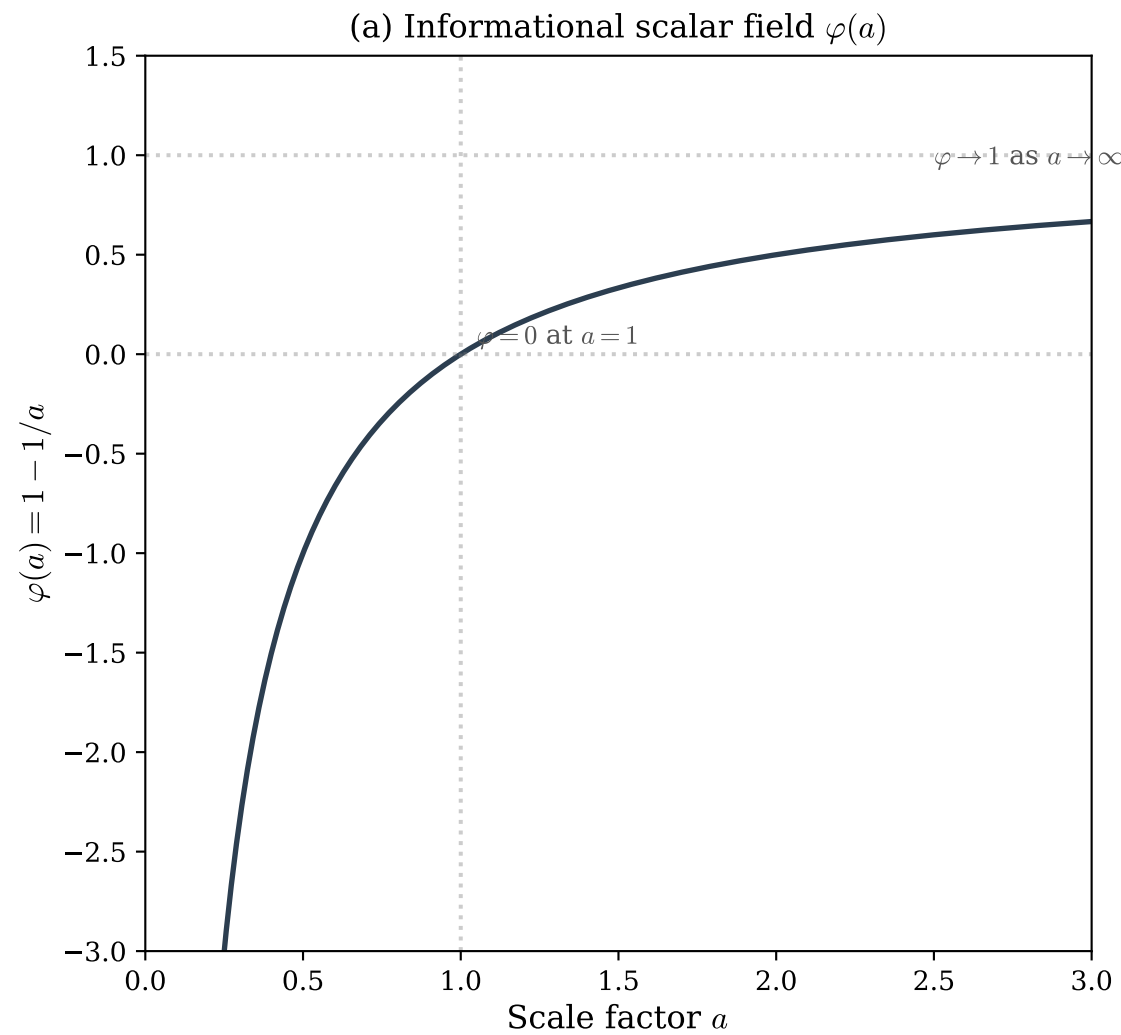


Phase 4: The Informational Scalar Field and Action Principle



THE ACTION PRINCIPLE

$$S = S_{\text{EH}} + S_{\Lambda} + S_{\text{matter}} + S_{\text{info}}$$

$$S_{\text{info}} = \int \left[\frac{3H_0^2}{8\pi G} \beta e^\varphi + \lambda (\dot{\varphi} - H/a) \right] \sqrt{-g} d^4x$$

Variation \rightarrow Modified Friedmann equation:

$$H^2 = \frac{8\pi G}{3} \rho + \frac{\Lambda}{3} + \beta e^{1-1/a} H_0^2$$

Equation of state:

$$w_{\text{info}}(a) = -1 - \frac{1}{3a}$$

The constraint $\dot{\varphi} = H/a$ is the NEW PHYSICS:
the scalar field tracks cumulative decoherence,
not its own Klein-Gordon dynamics.