

Active Screen Gravity — Technical Question

This short note asks whether a localized running Planck mass in a scalar–tensor inflation model introduces genuinely new dynamics or can always be mapped to a standard single-field Einstein-frame model by a field redefinition.

Model structure:

$$\text{Effective potential } U(\chi) = V(\chi) / F(\chi)^2$$

$$\text{with } F(\chi) = 1 + \beta \exp[-(\chi - \chi_0)^2 / \Delta^2].$$

Slow-roll slope:

$$U'/U = V'/V - 2F'/F$$

Spectral tilt modification:

$$\Delta n_s \approx -4 F''/F$$

Tensor suppression:

$$r \approx r_0 (1 - \gamma \beta)^2$$

Question:

Does a localized running of the effective Planck mass correspond to a physically distinct inflationary model, or is it always equivalent (via conformal transformation and field redefinition) to a standard single-field plateau model in Einstein frame?

Any insight on whether this construction represents new physics or only a reparametrization would be greatly appreciated.