Stochastic simulation of reheating and/or warm inflation

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smooth reheating

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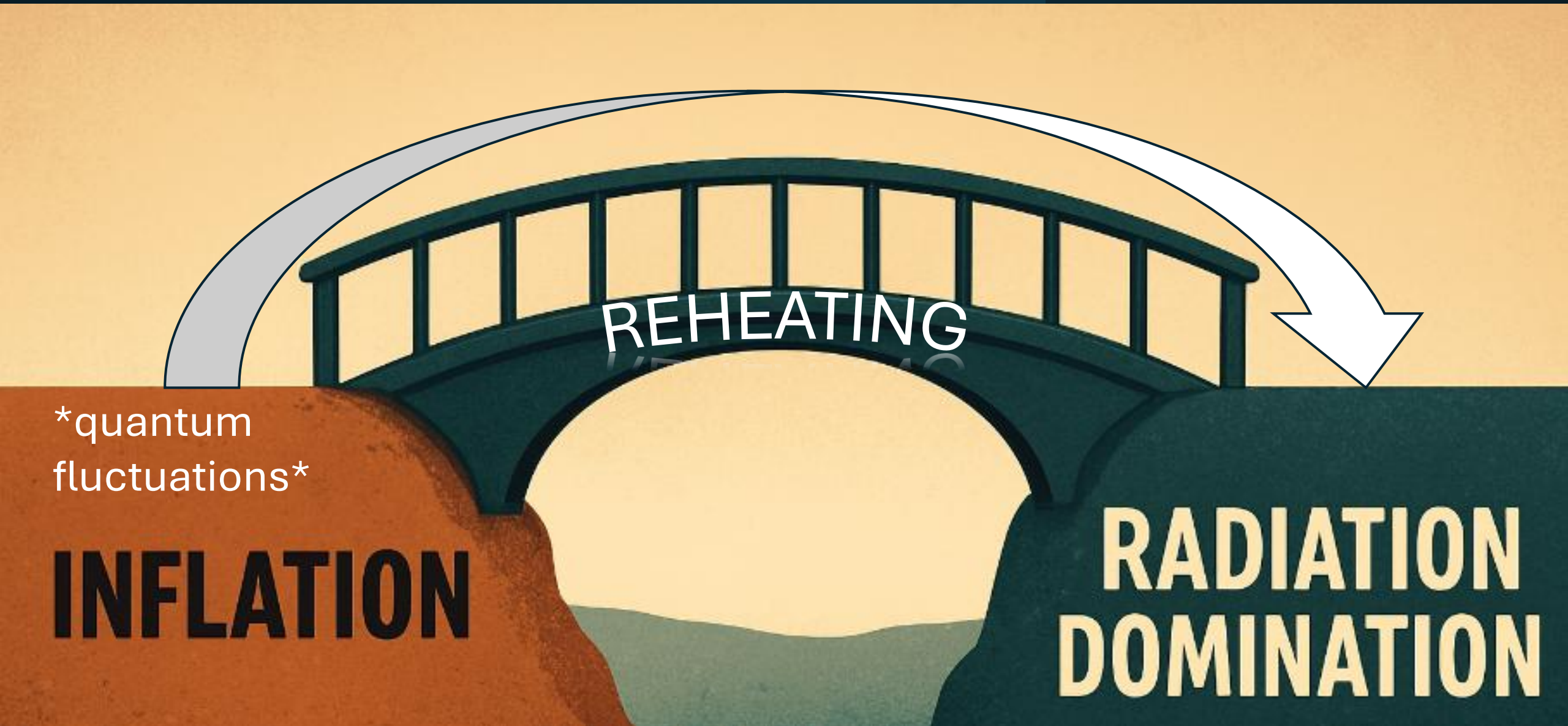

smooth reheating

evolution of scalar perturbations

$$\underbrace{\varphi^{;\mu}{}_{;\mu} - V_{,\varphi}}_{\text{klein-gordon}} - \underbrace{\Upsilon(T,\varphi)}_{\text{dissipation}}\, u^{\mu}\varphi_{,\mu} + \underbrace{\varrho}_{\text{fluctuations}} = 0$$

our work

Derive model agnostic, stochastic evolution equations.

Solve them numerically.

Example: SM with QCD axion.

details:

- gauge invariance
- no slow roll approximation
- inflaton equilibration determined dynamically
- correct quantum and classical limits
- …

See you downstairs :)