

arXiv:1803.01961 and references therein

Expected CMB polarization signals in Bouncing Cosmologies

SMOOTHING THROUGH SLOW CONTRACTION/ LARGE PRESSURE

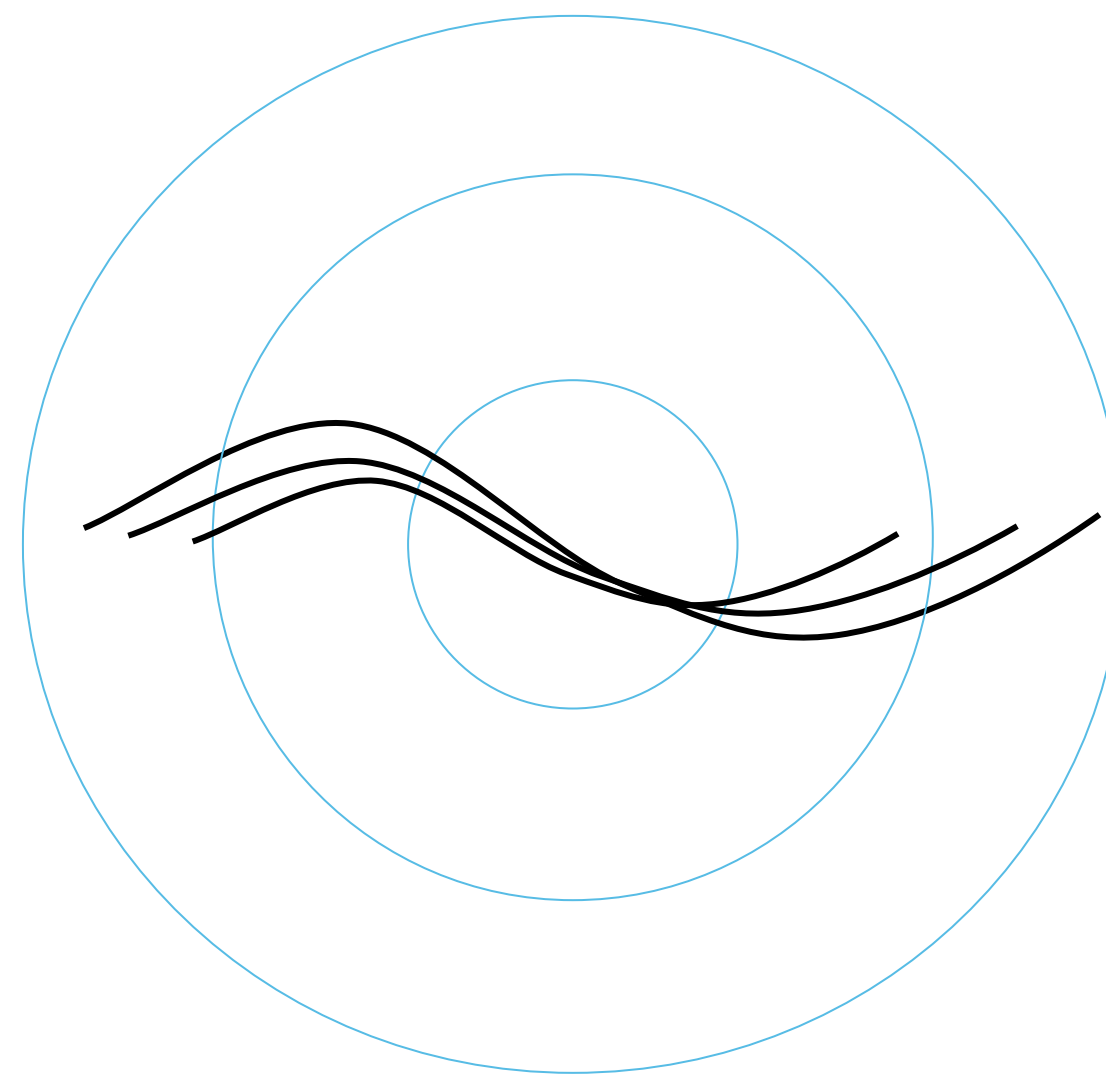
EQ. OF STATE: $\varepsilon = (3/2)(1+p/\rho) \geq 3$

HORIZON SIZE:

$$H^{-1} \sim a(t)^\varepsilon$$

PATCH SIZE:

$$\mathbf{R}(t) \sim \mathbf{a}(t) \sim \mathbf{MODE}$$



SUPERHORIZON MODES

Generation of perturbations in Bouncing Cosmologies

$$\mathcal{S} = \int d^4x \sqrt{-g} \left(\frac{1}{2} R - \frac{1}{2} (\partial_\mu \phi)^2 + V_0 \exp(-\sqrt{2\epsilon} \phi) - \frac{1}{2} \Omega^2(\phi) (\partial_\mu \chi)^2 \right)$$

DENSITY PERTURBATIONS:

- stable background solution;
- least tuned;
- (near) scale invariance
- local non-gaussianity: $f_{\text{NL}} = 0$

CONVERSION!

$f_{\text{NL}} \sim \mathcal{O}(1)$ possible

NO PRIMARY TENSOR PERTURBATIONS!

... but

- secondary tensors ($r \sim 10^{-6}$);
- B-modes from defects possible (typically, non-Gaussian)

