

On the possibility of Braneworld Quintessential Inflation

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arXiv:1002.3730

The modified cosmology

- Friedmann equation for the brane:

$$H^2 = \frac{8\pi}{3m_4^2} \rho \left[1 + \frac{\rho}{2\lambda} \right] + \frac{\Lambda_4}{3} + \frac{\epsilon}{a^4}$$

4-D Planck mass

Brane tension

Cosmological
constant from
intrinsic tension

Bulk gravitons

The modified cosmology

- Friedmann equation for the brane:

$$H^2 = \frac{8\pi}{3m_4^2} \rho \left[1 + \frac{\rho}{2\lambda} \right]$$

Friction term

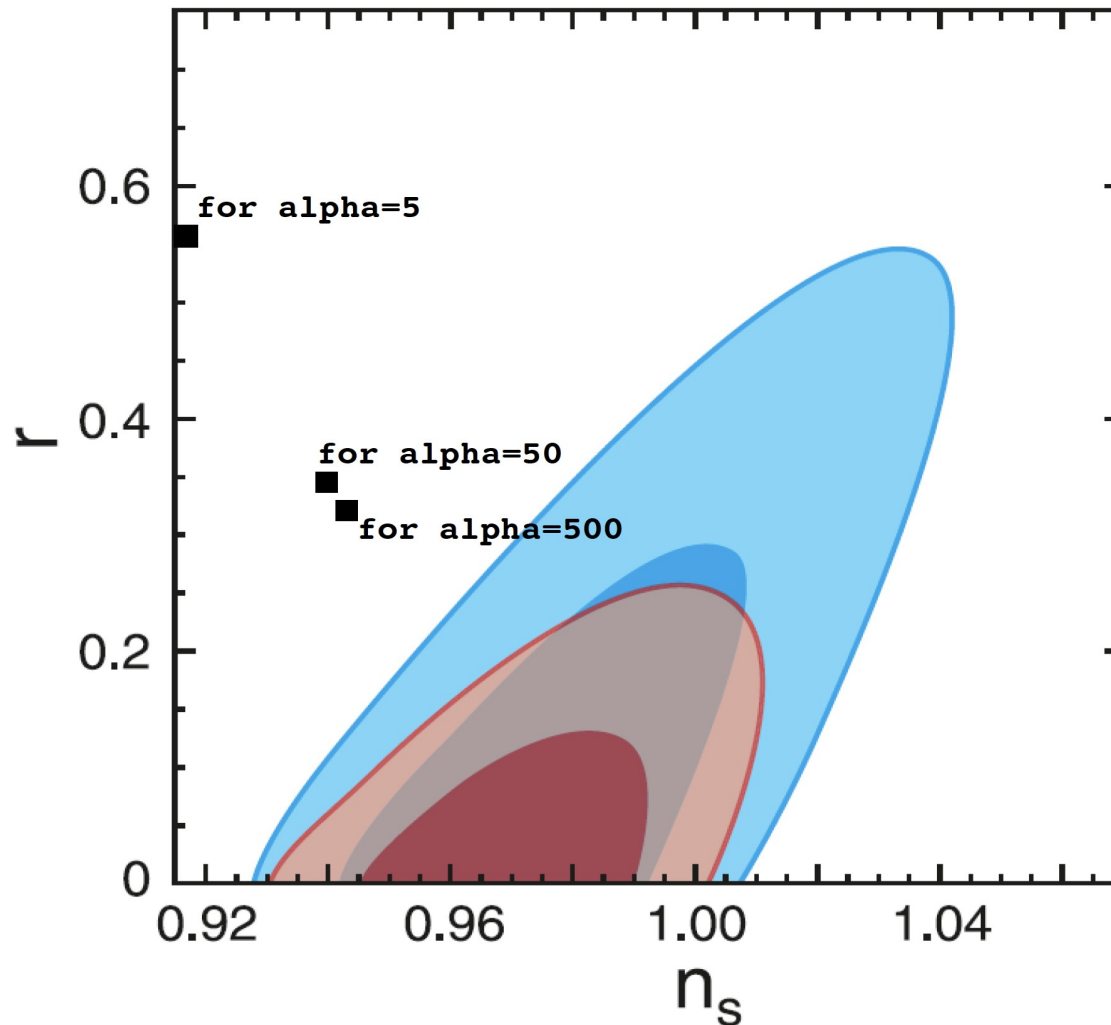
- The scalar field confined to the brane:

$$\ddot{\phi} + 3H\dot{\phi} = -\frac{dV}{d\phi}$$

Inflation

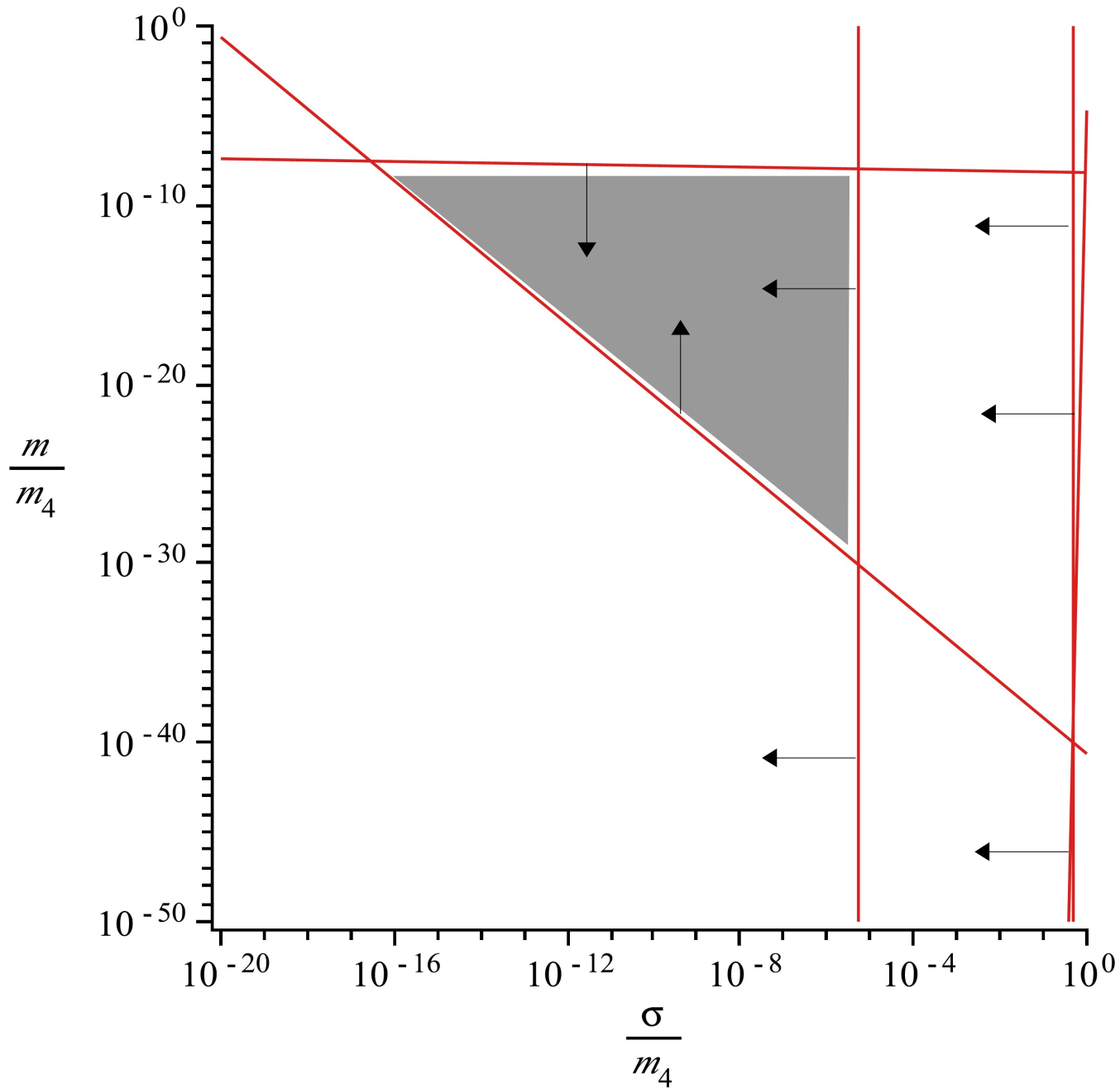
$$V = V_0 \exp(-\alpha\phi/m_4)$$

$$V = V_0 \left(\frac{\phi}{m_4} \right)^{-\alpha}$$



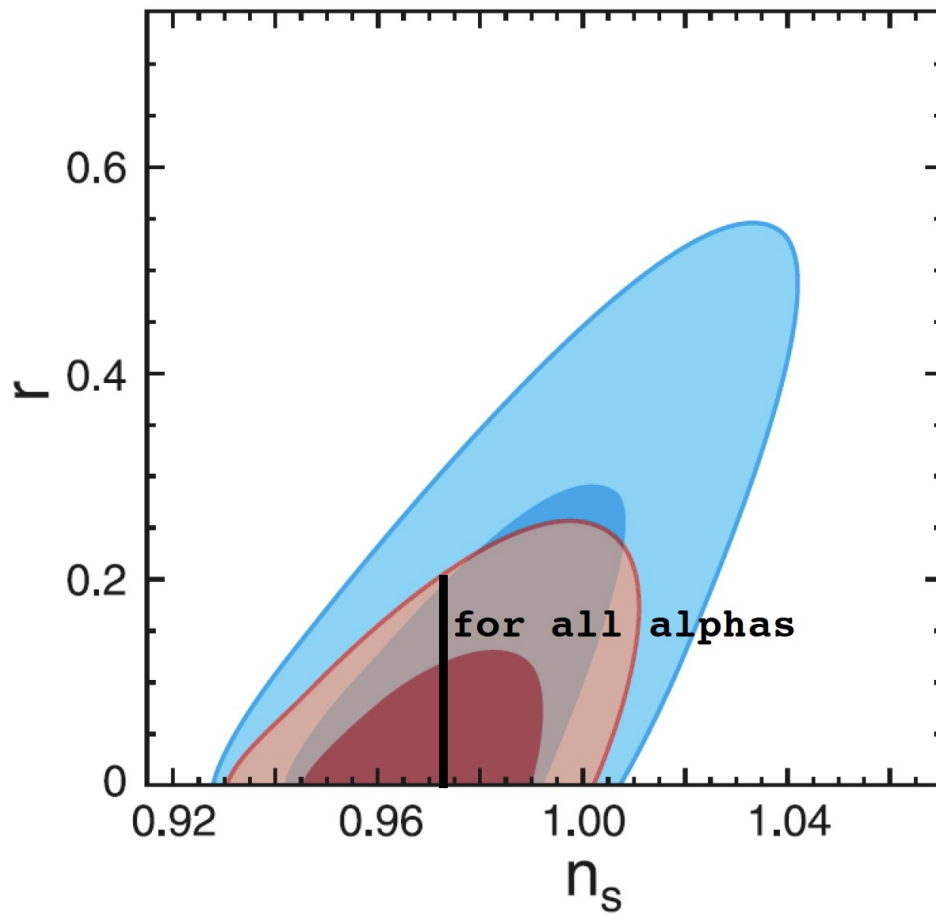
Blue contours:
WMAP5 data.
Pink contours:
WMAP5 + BAO + SN
data.

Inflation

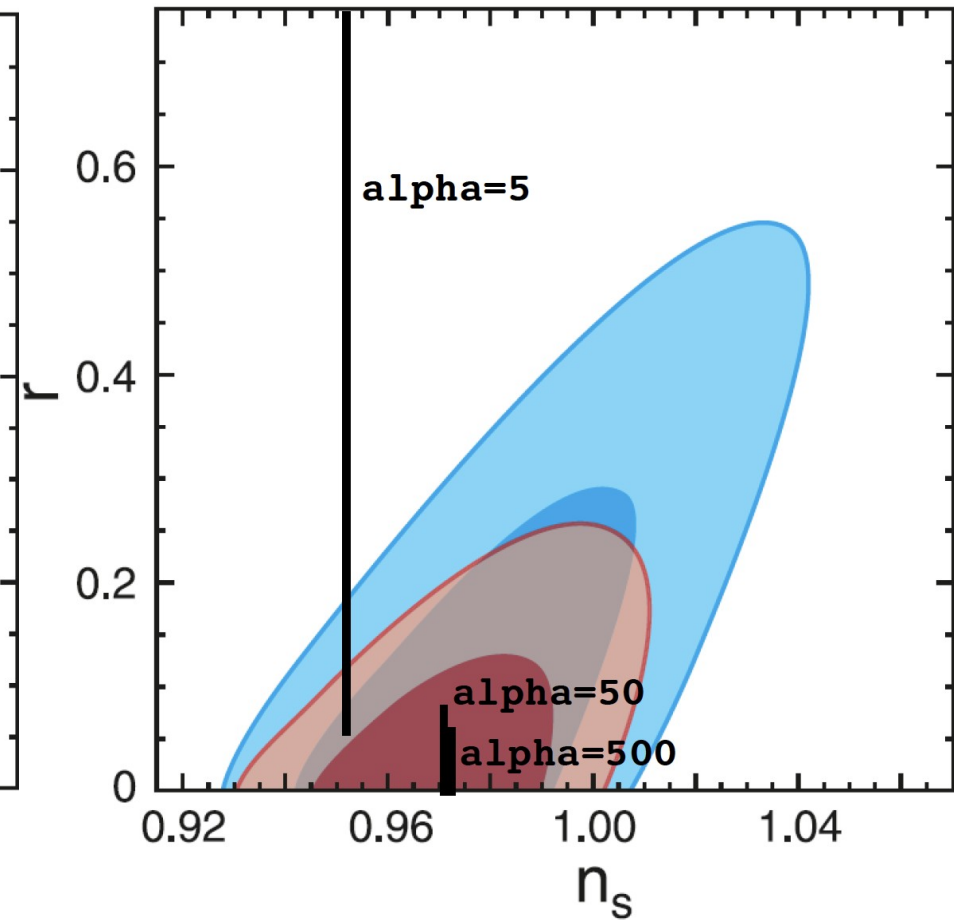


Inflation

Exponential potential

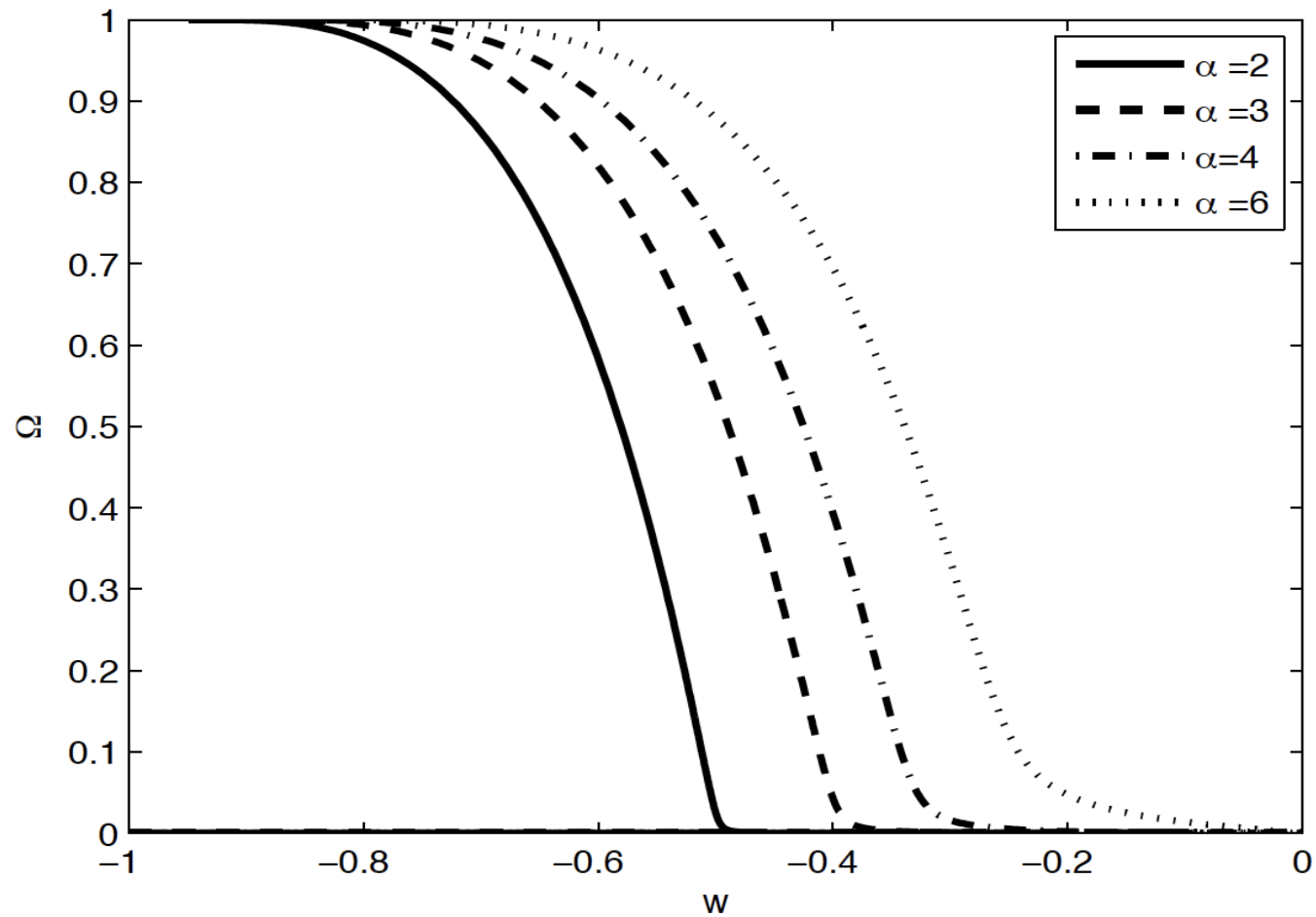


Inverse power law potential



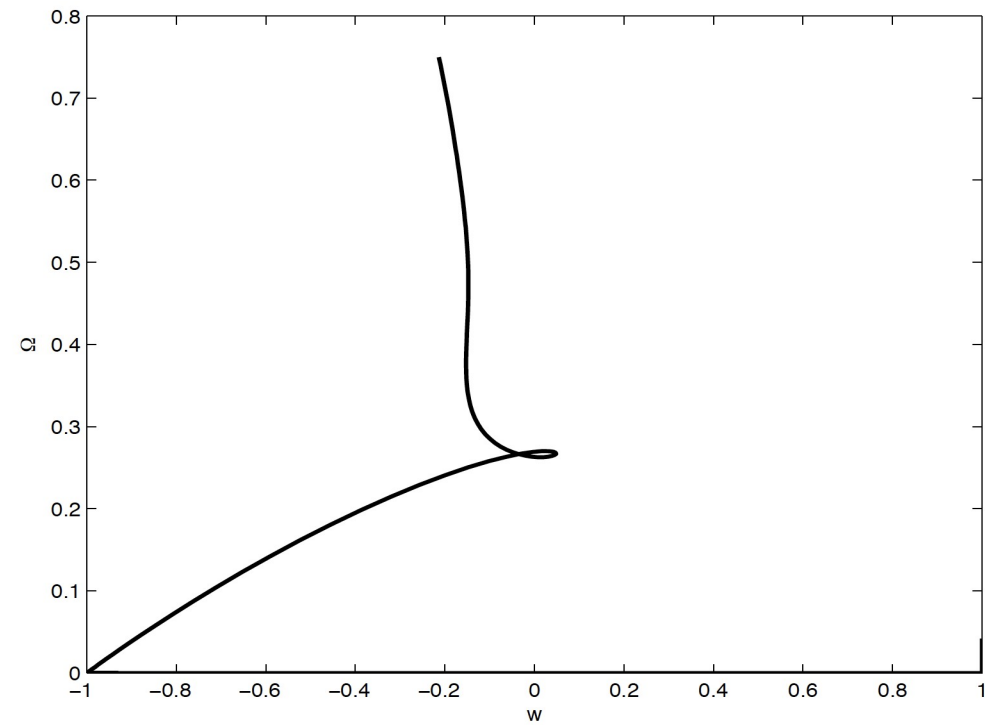
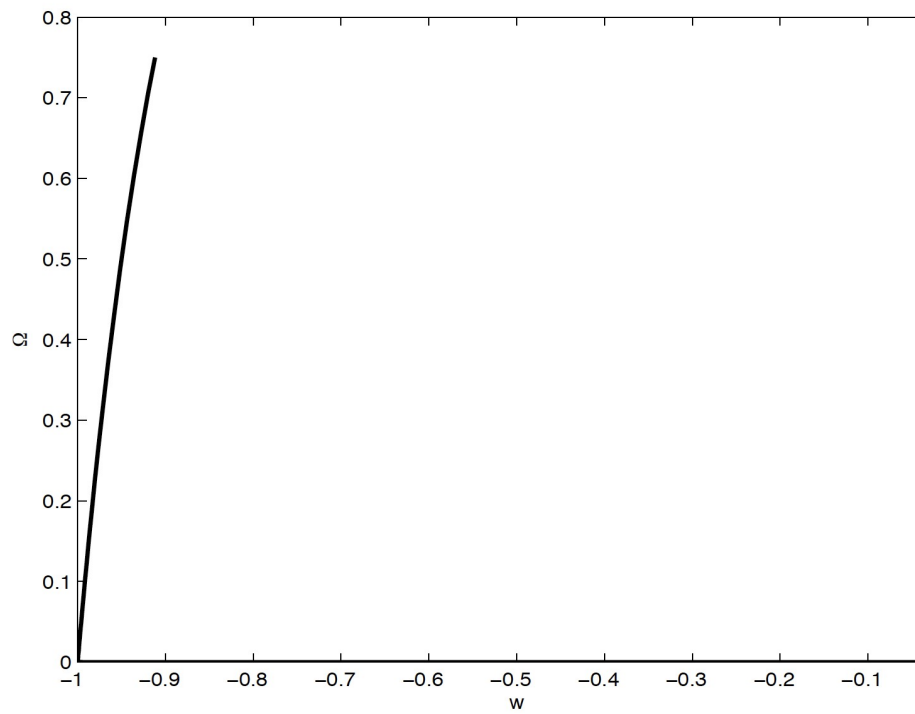
Quintessence

- Tracking Solution



Quintessence

- Thawing Solution



Conclusions

