The Inflationary Model Space

Tensor/Scalar Ratio	Experiment	$V(\phi)$	Physics Probed
$r \sim \mathcal{O}(0.1)$	Planck	$m^2\phi^2$	Potential reconstruction Transplanckian Physics
$r \sim \mathcal{O}(0.01)$	CMBPOL	$V_0 - m^2\phi^2$	Inflaton mass
$r \leq \mathcal{O}(0.001)$	BBO	$V_0 - \lambda\phi^4$	Reheating scale (from spectral index)

Future CMB Measurements vs. Models
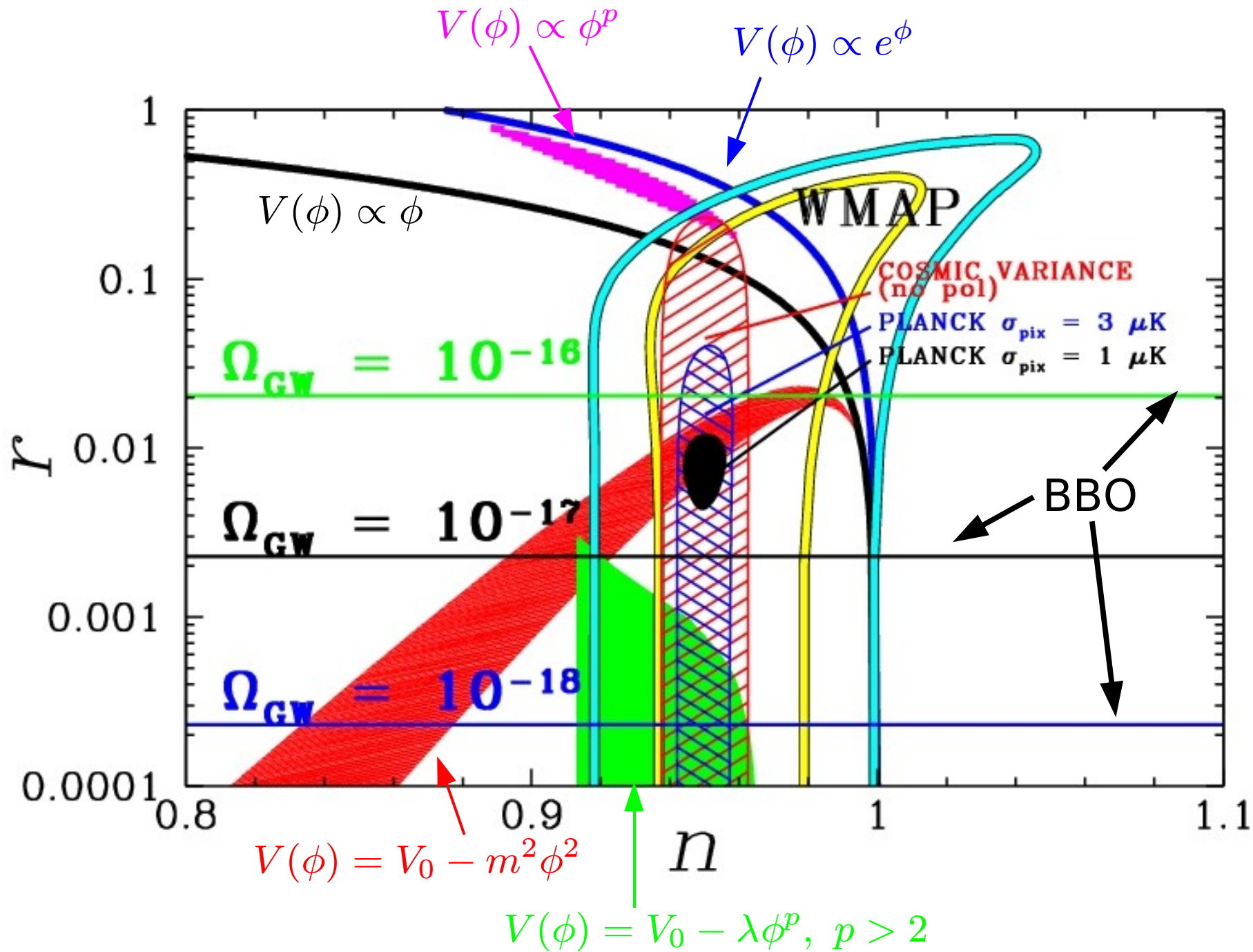
Natural Inflation: pseudo-Nambu-Goldstone bosons
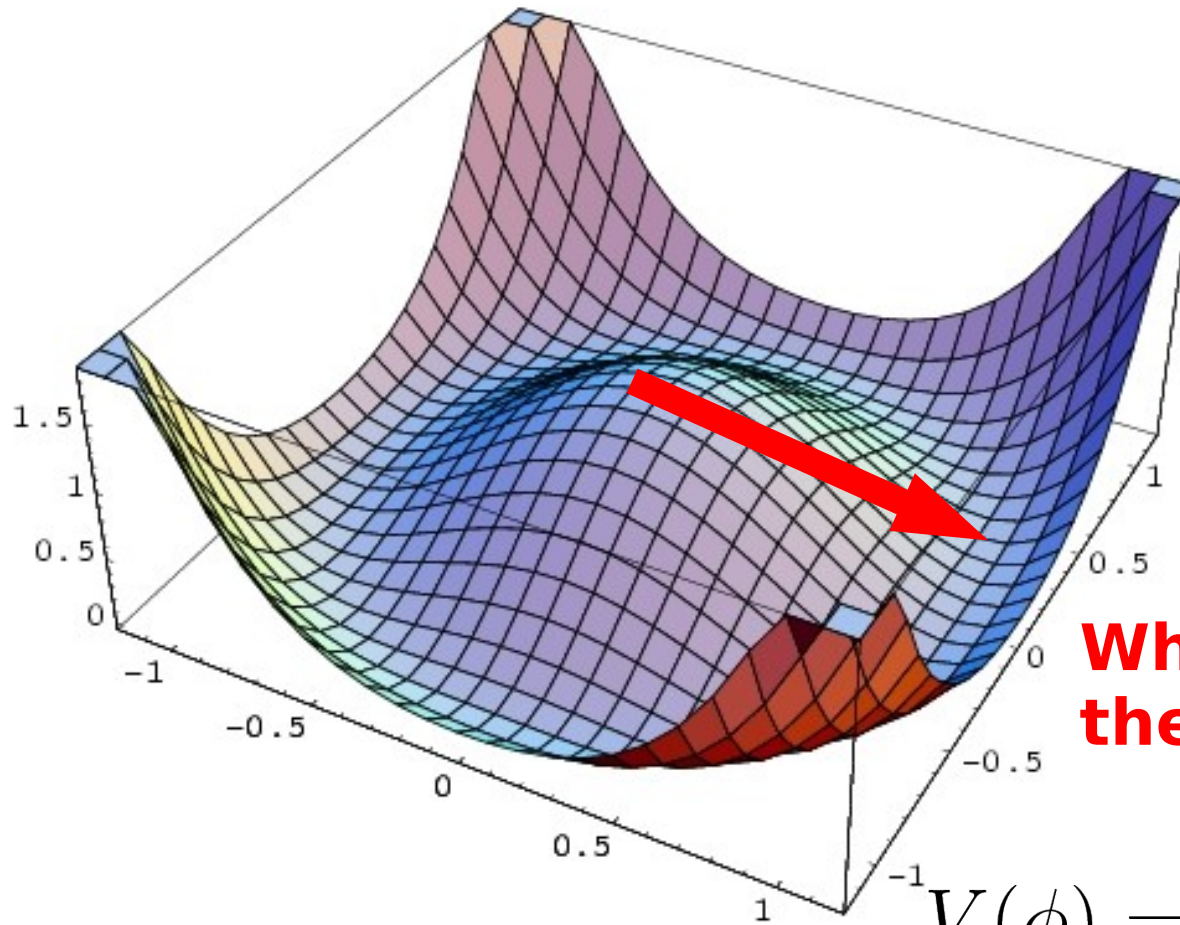
What is the width of the potential?

$$V(\phi) = \Lambda^4 \left[1 + \cos\left(\frac{\phi}{f}\right) \right]$$

Frieman, Freese & Olinto, PRL **65** (1990) 3233

Natural Inflation: WMAP3 limits

Kinney, Kolb, Melchiorri, and Riotto

$f = 10\ m_{Pl}$

$f = 2\ m_{Pl}$

$f = 0.7\ m_{Pl}$

$f = m_{Pl}$

$f = 0.6\ m_{Pl}$

$N_I = 46$

$N_I = 60$

r

n

0.1

0.01

0.001

0.0001

0.9

1

Savage, Freese, WHK, hep-ph/0609144