emergence

of n_s *from* ***semi-blind reconstruction of Scalar / Tensor power spectra***

early Universe acceleration histories

of ***w(a)*** *from* ***informed reconstruction***

late Universe acceleration histories

we know more about early-inflaton dynamics than late-inflaton dynamics

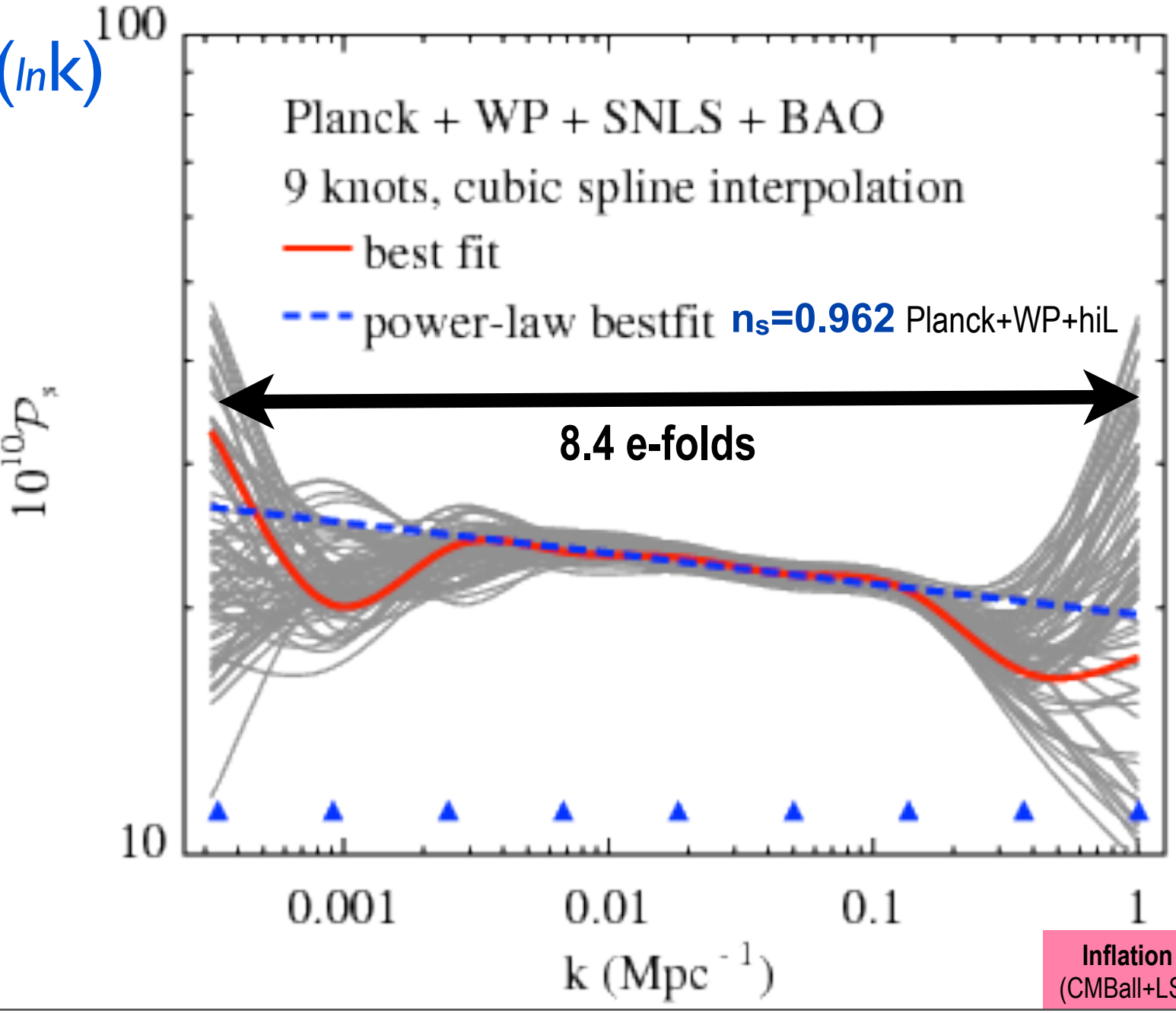
of *the* ***differentially*** **accelerating**

“vacuum”, then & now

uniform acceleration $\varepsilon(t) \equiv 3KE/(KE+PE)$ *=constant over observable e-folds is strongly ruled out => early-U acceleration must change over observable scales (as well as to end inflation)*

scan $ln\mathbf{P_s}(ln k)/A_s$, $ln\mathbf{A_s}=ln P_s(k_{pivot,s})$, $\mathbf{r}(k_{pivot,t})$; *consistency => reconstruct* $\boldsymbol{\varepsilon}(ln\mathbf{Ha})$, $\mathbf{V(\psi)}$

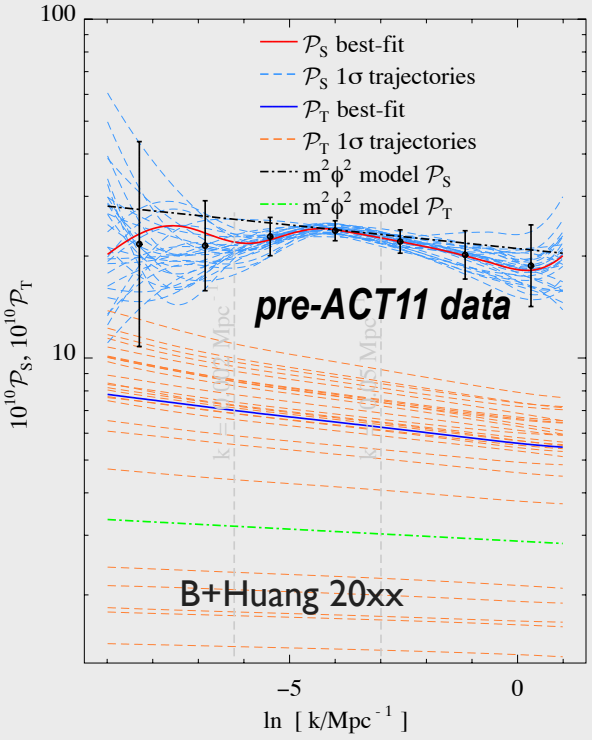
$ln P_s(ln k)$

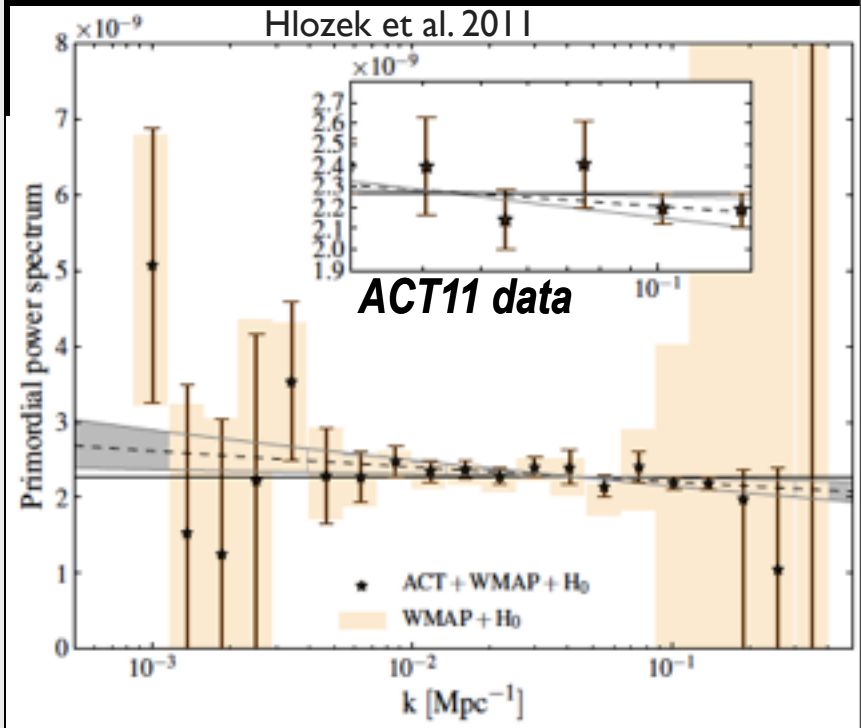


Inflation Histories
(CMBall+LSS+SN+WL)

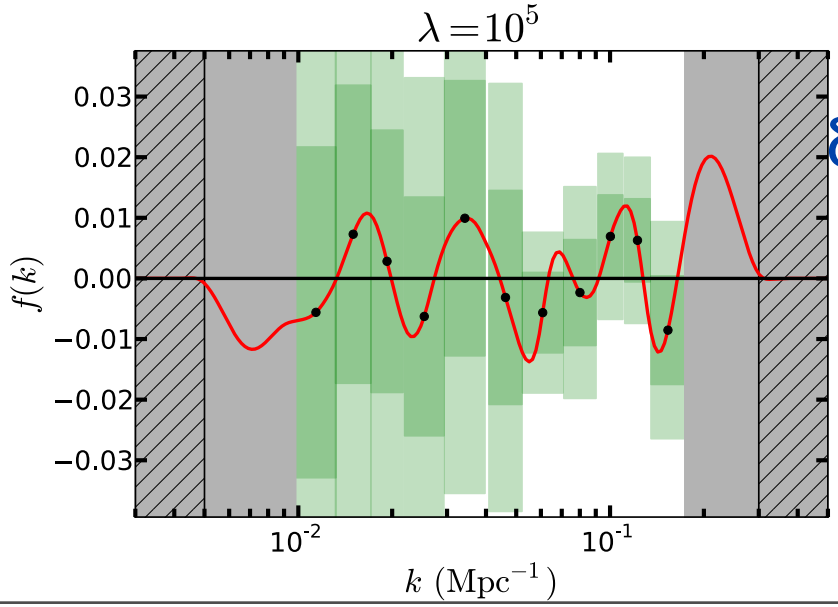
early-U, NOW

semi-blind & informed reconstruction of Scalar / Tensor power spectra, acceleration histories

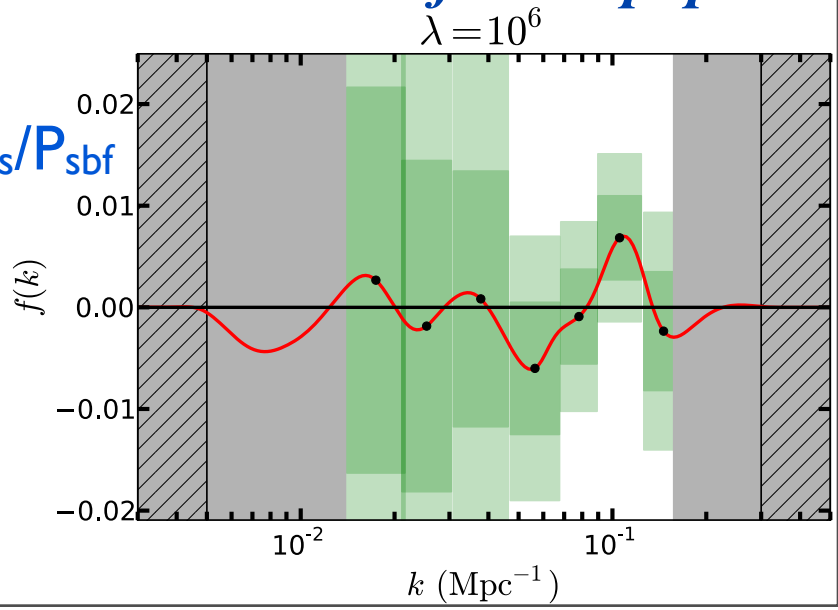




Planck1.3 inflation paper

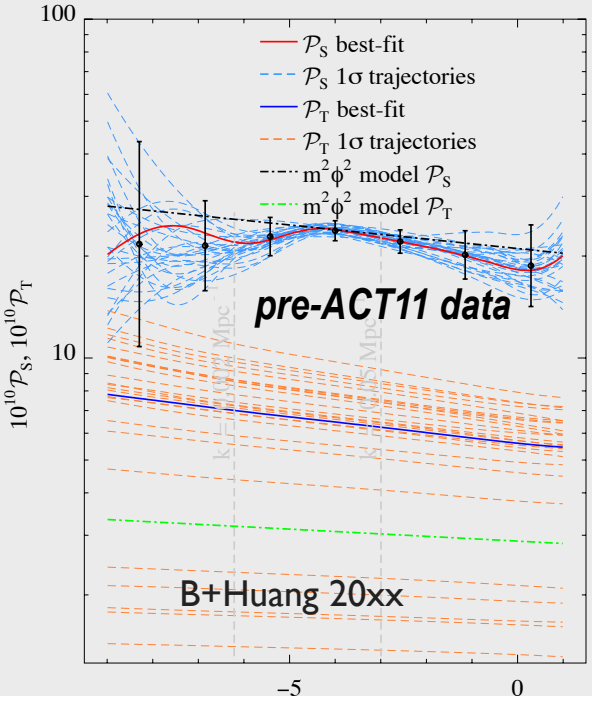


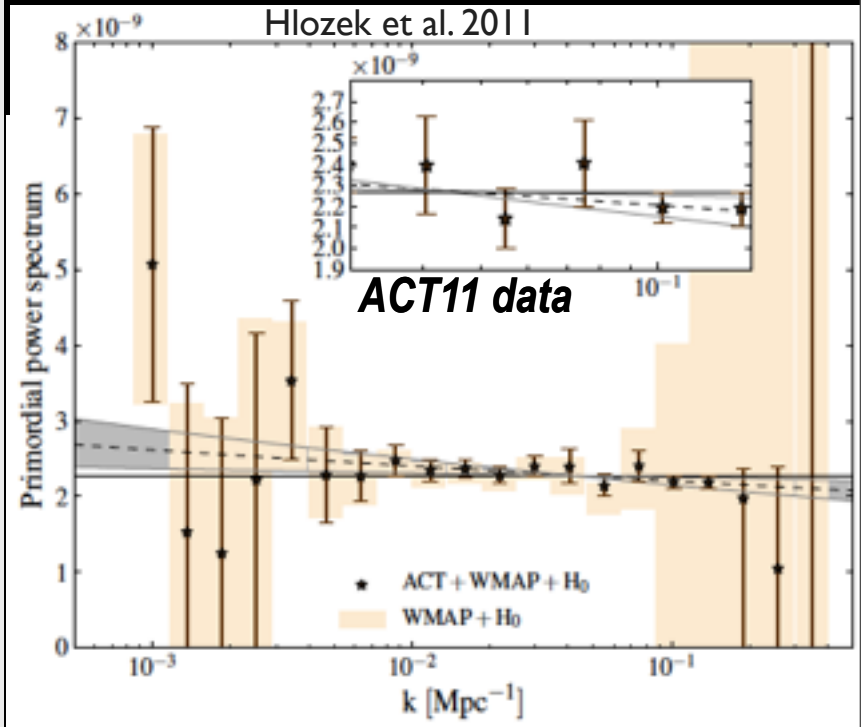
$\delta P_s/P_{sbf}$



early-U, NOW

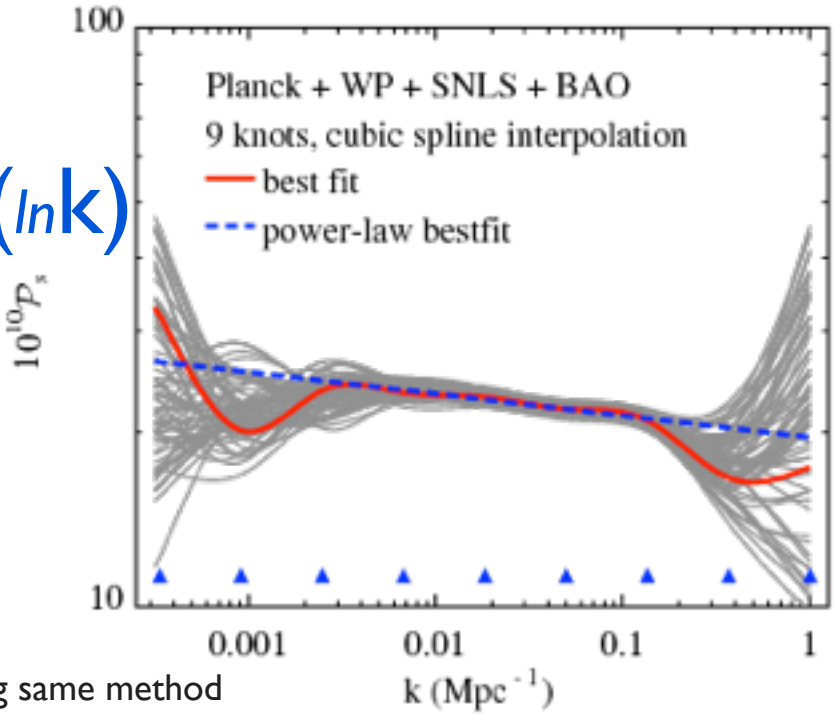
semi-blind & informed reconstruction of acceleration histories & S/T power spectra





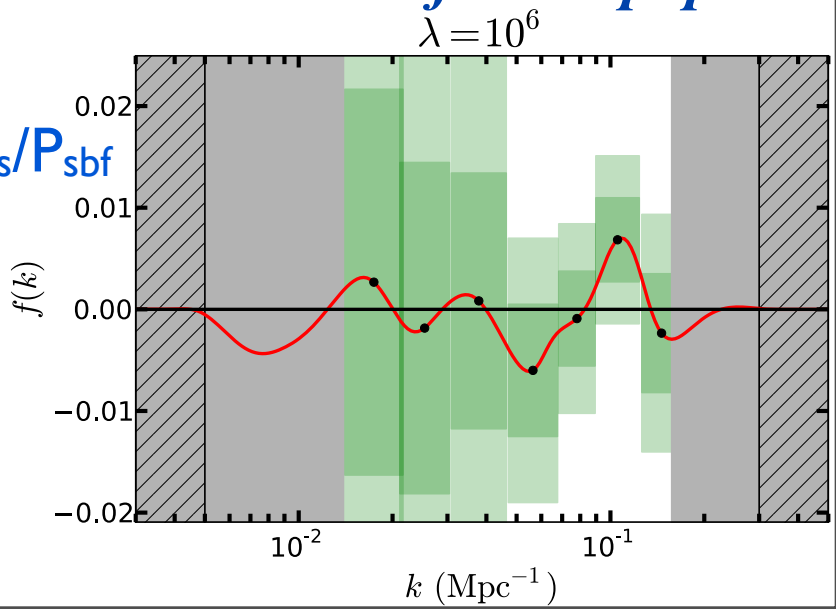
Planck1.3 inflation paper

$\ln P_s(\ln k)$



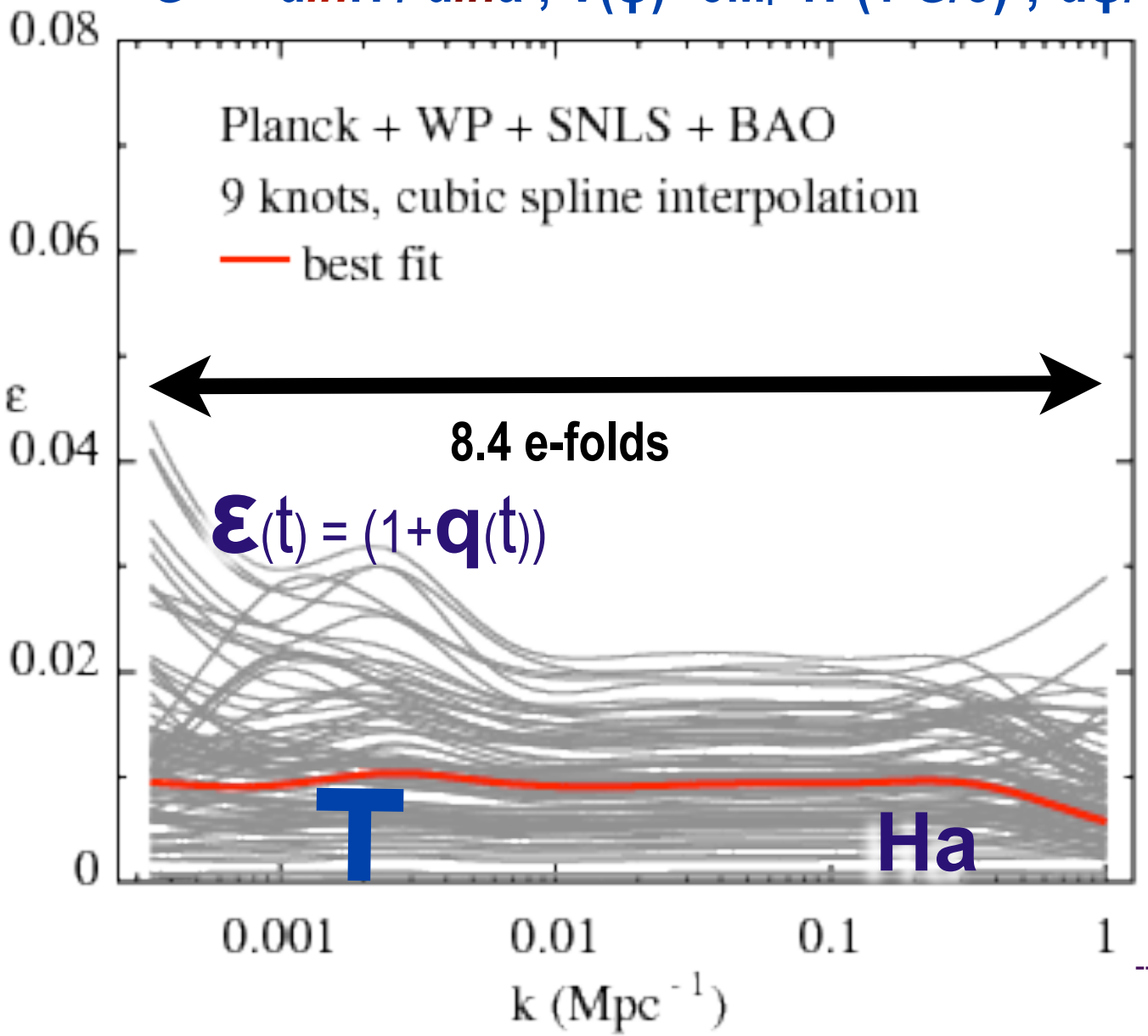
B+Huang same method

$\delta P_s/P_{sbf}$



late-inflaton DE acceleration trajectories then

$\varepsilon = -\, d\ln H / d\ln a$; $V(\psi) \approx 3M_P^2H^2(1-\varepsilon/3)$; $d\psi / d\ln a = \pm\sqrt{\varepsilon}$



aka

$(1+W_{de})^{3/2}$

then

(hydro)

resolution
lnk ~ lnHa
dynamics

$\varepsilon \approx r/16$

$\varepsilon \approx V$

$0.0005\ (10^{16}\text{Gev})^4$

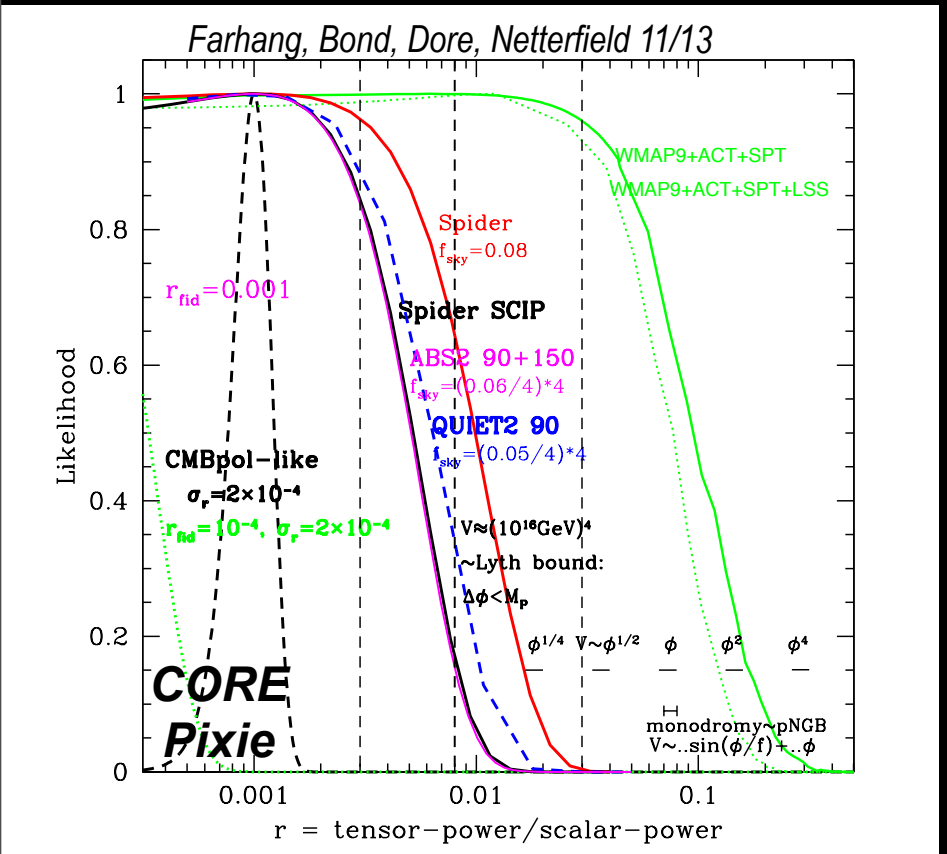
Spider24days+Planck2.5yr: r-n_t *matrix*-forecast for $r=0.12$ input for $m^2\varphi^2$ ($2\sigma_r \sim 0.02$ including fgnds)

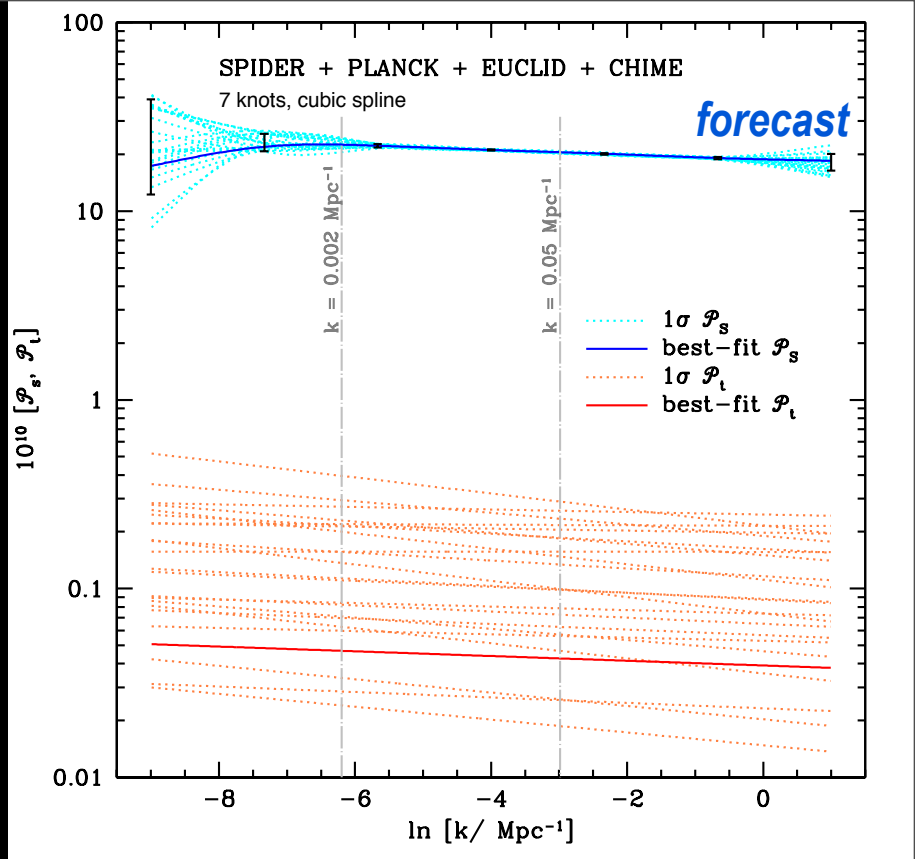
*similar r-forecasts for **ABS+/VIP, Quiet***

inflation consistency

$$-n_t \approx r/8 \approx 2\varepsilon(k)$$

$$1-n_s \approx 2\varepsilon + d\ln\varepsilon/d\ln Ha$$

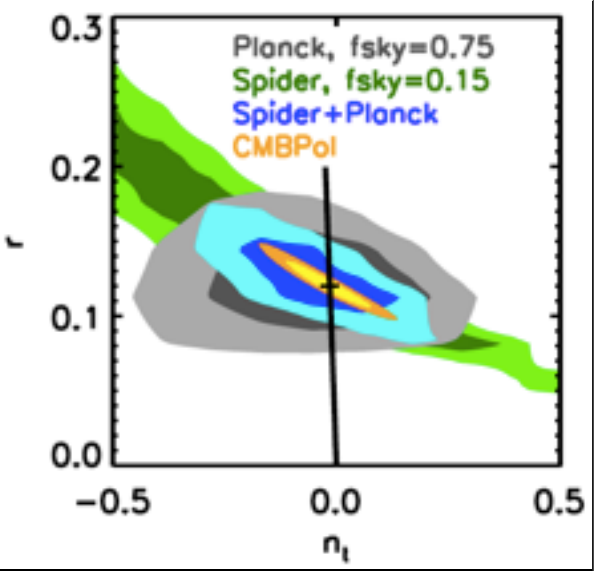


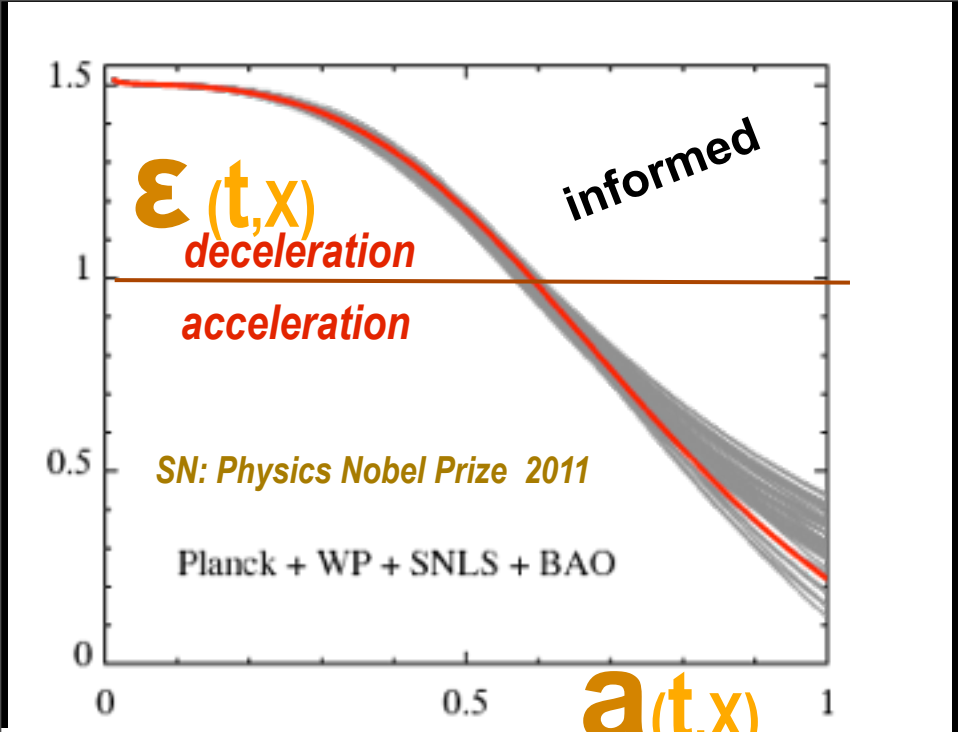


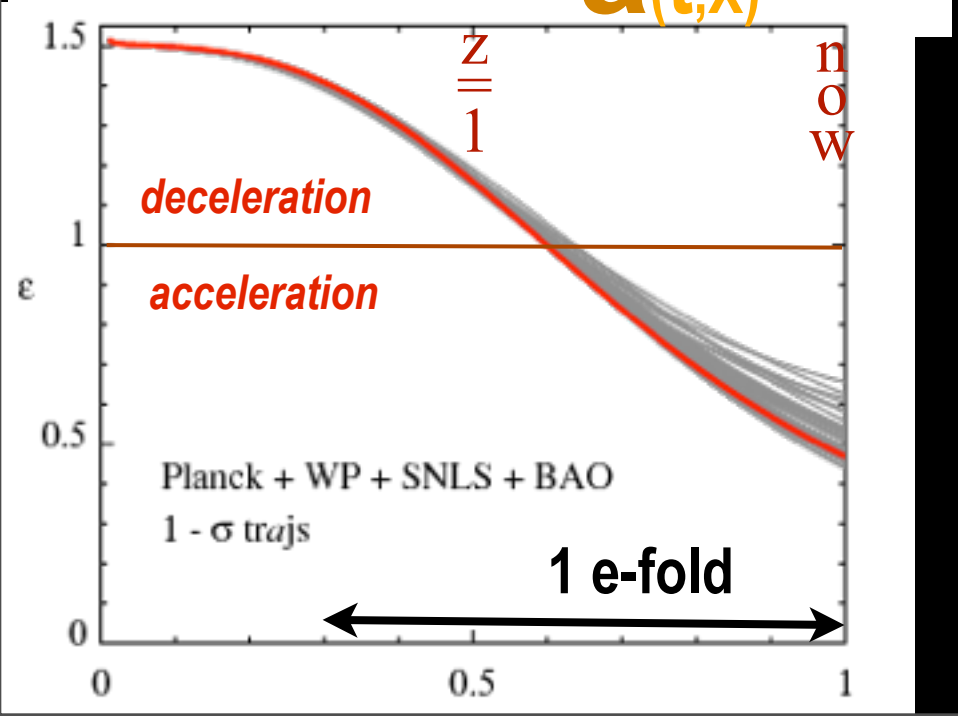
can get B-mode shapes but without the precision needed to check

$$-n_t \approx r/8$$

consistency







late-inflaton DE trajectories

is there late time "vacuum kinetic energy" as well as late time "vacuum potential energy"

$1+W_t = -d\ln\rho_t / d\ln a^3 = 2/3\ \varepsilon(t)$

$= 2/3\ (1+q(t))$

***informed* =**

1+3-parameter $W_{de}(a|V(\psi),IC)$

$= w(a|\varepsilon_s \varepsilon_{de\infty} \varsigma_s)$

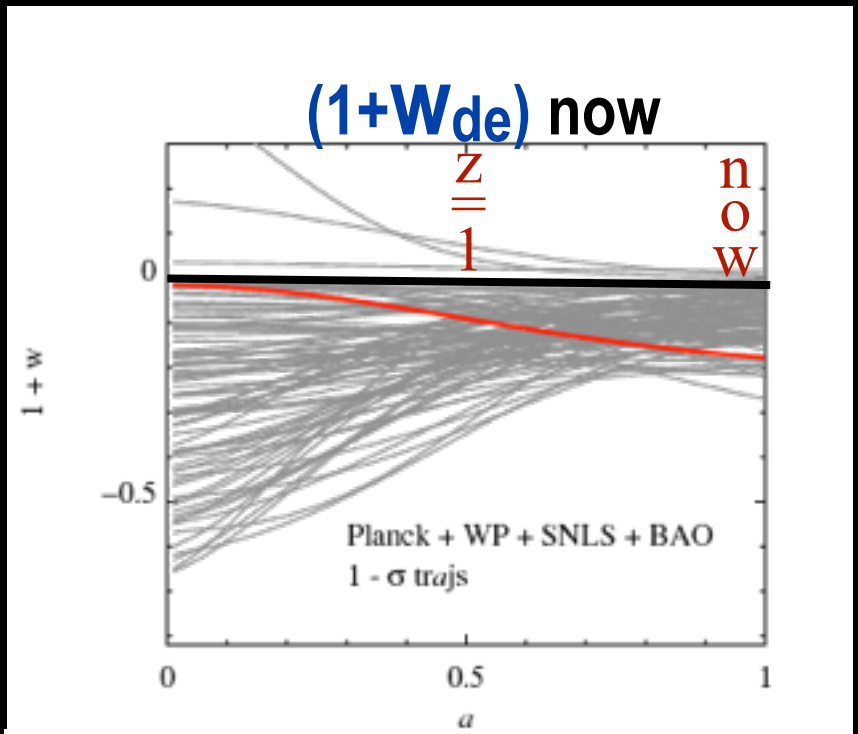
$V_{de},\ \varepsilon_s = (d\ln V / d\psi)^2/4\ ,..$

paves even wild late-inflaton trajectories

cf. semi-blind eigen-analysis

late-inflaton DE trajectories

$(1+W_{de}) = - d\ln\rho_{de} / d\ln a^3$

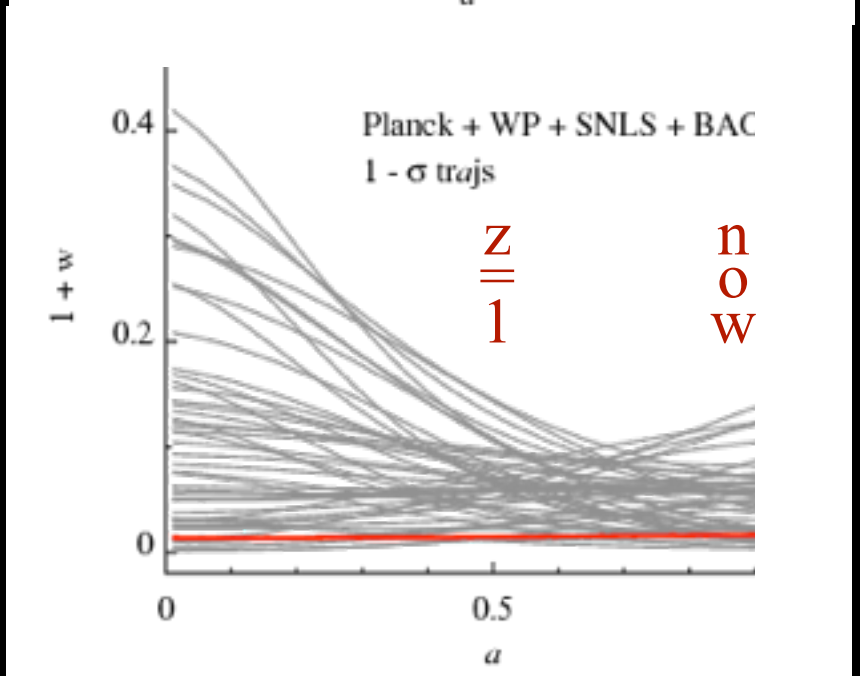


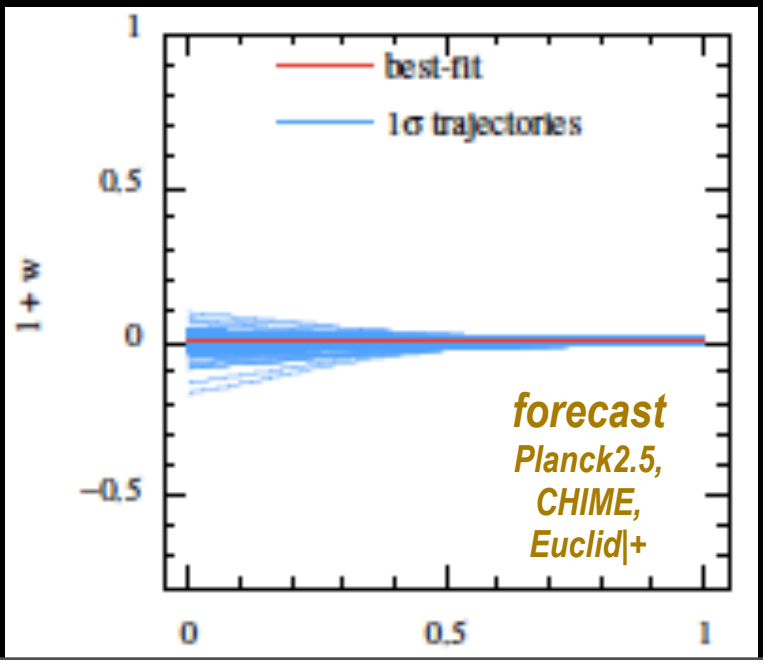
$\varepsilon_s = (d\ln V/d\psi)^2/4$ @pivot a_{eq}

= -0.25 + .20 -.26

= 0.00 + .21 *P1.3+SNLS3*

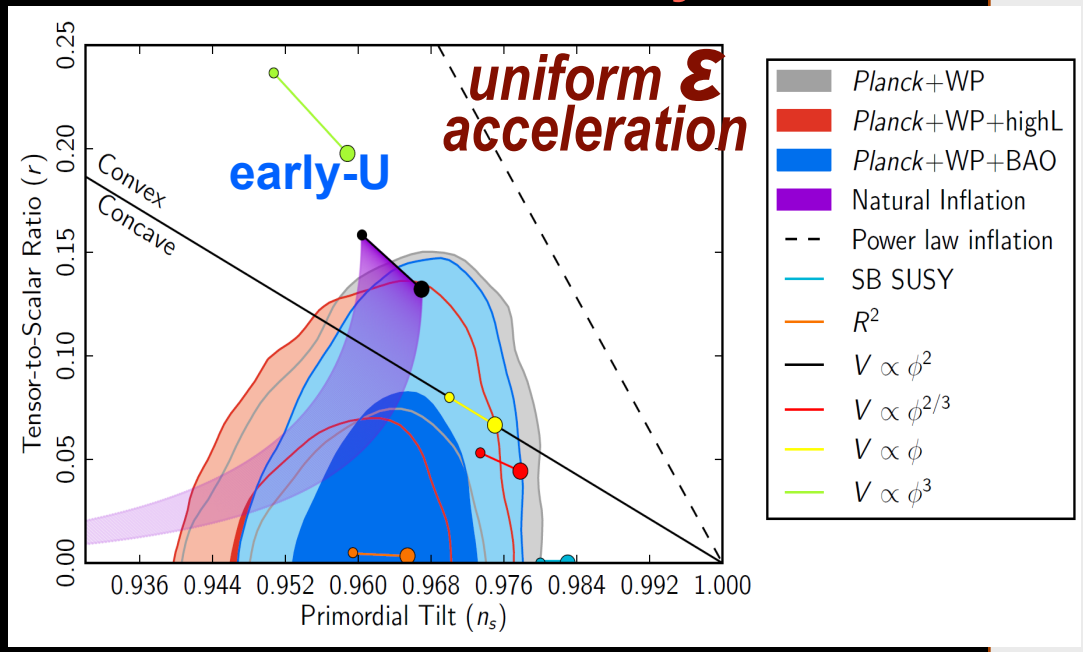
to =.005 + .031 -.025 future





introduce a late-U DE plot littered with theory models similar to the early-U r-n_s plot. with HBK10/BH11 parameterization of the DE trajectories this can be done.

inflation consistency



r<0.12 => $\varepsilon_{.002}$ < 0.008 P1.3+WP

***uniform acceleration** line*
ε ≡3KE /(KE+PE)** = constant over observable e-folds is **strongly ruled out
=> early universe acceleration must change over observable scales (as well as to end inflation)