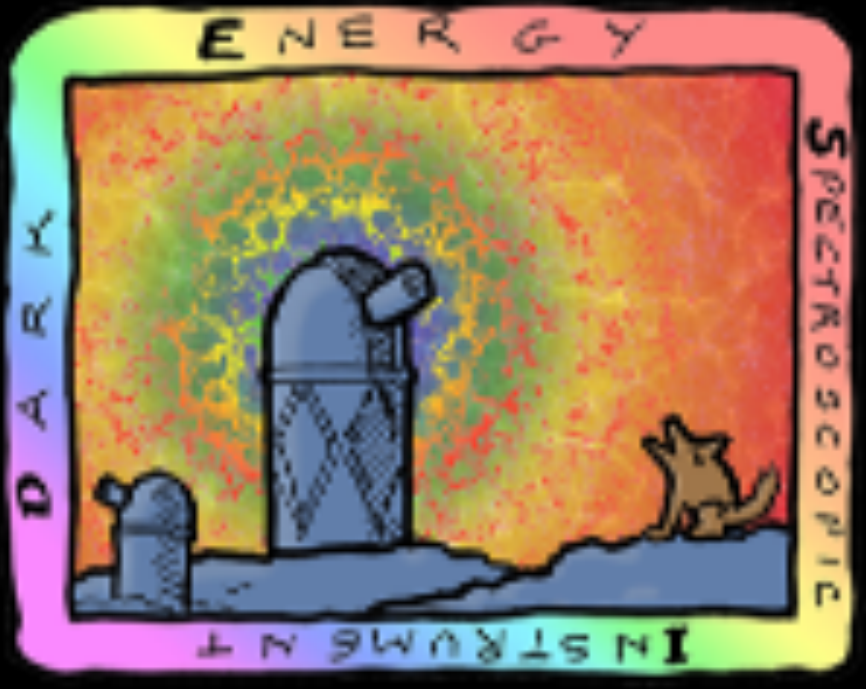

DARK ENERGY SPECTROSCOPIC INSTRUMENT

U.S. Department of Energy Office of Science

DESI VI. Cosmological constraints - Aug 2024 XII ICNFP @ Crete, Greece, 2024

Uendert Andrade (UMichigan)

34

CMB (no lensing)

CMB

SDSS: BAO+BBN

DESI: BAO + BBN

DESI: BAO + θ_* + BBN

Early

Late

CCHP: TRGB

SH0ES: Cepheids

66

68

70

72

74

$H_0\,[\mathrm{km\,s^{-1}\,Mpc^{-1}}]$

CMB (no lensing)

CMB

SDSS: BAO+BBN

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$H_0\,[\mathrm{km\,s^{-1}\,Mpc^{-1}}]$

DESI + BBN

DESI + θ_* + BBN

SDSS

CMB

SHOES

Flat ΛCDM model

CMB (no lensing)
CMB
SDSS: BAO+BBN
DESI: BAO + BBN
DESI: BAO + θ_* + BBN
CCHP: TRGB
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Early
Late
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$H_0\,[\mathrm{km\,s^{-1}\,Mpc^{-1}}]$

CMB (no lensing)

CMB

SDSS: BAO+BBN

DESI: BAO + BBN

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Early

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CCHP: TRGB

SH0ES: Cepheids

66

68

70

72

74

$H_0\,[\mathrm{km\,s^{-1}\,Mpc^{-1}}]$

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Hubble constant

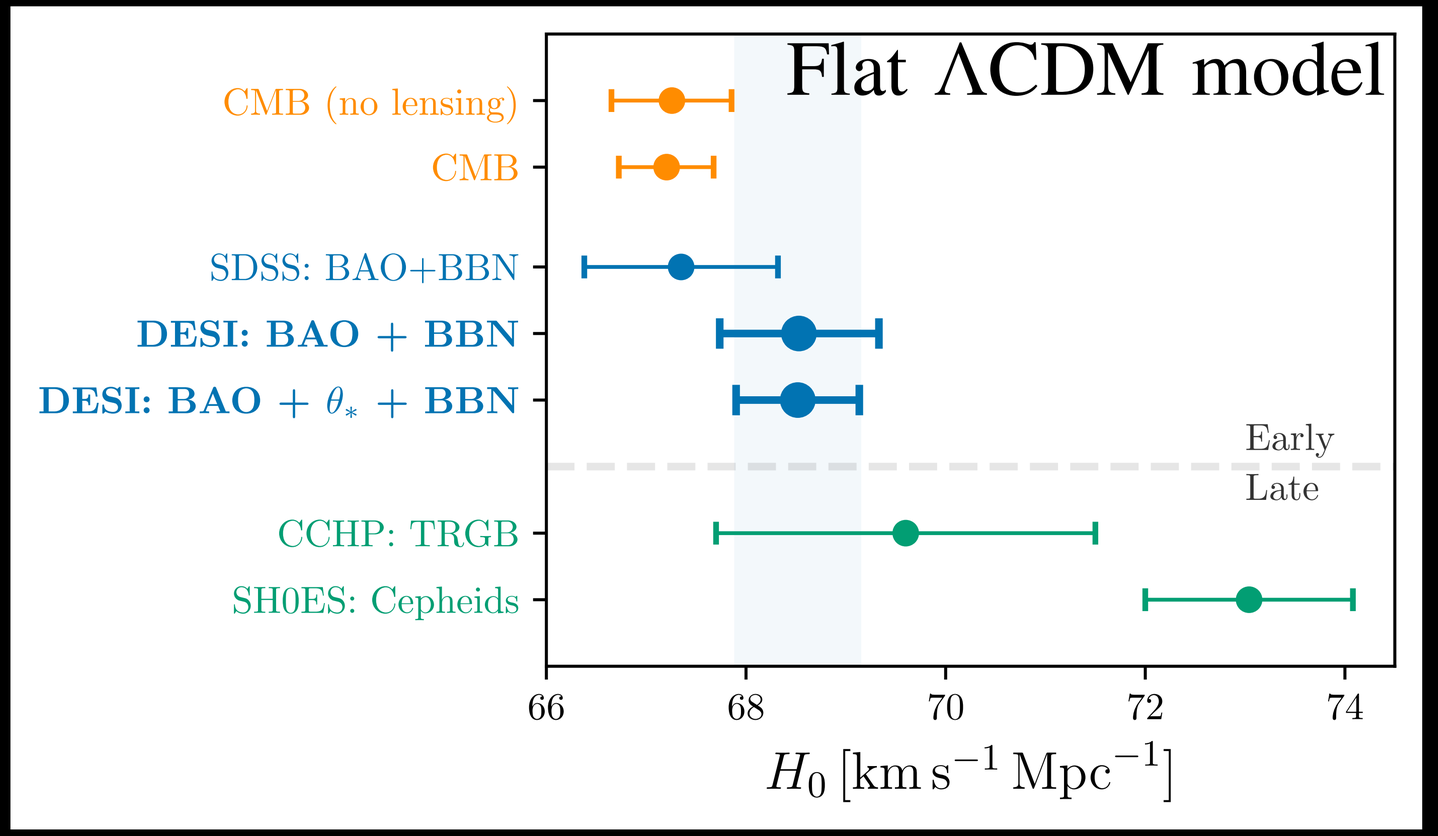
$H_0 = (68.53 \pm 0.80)\ \mathrm{kms}^{-1}\ \mathrm{Mpc}^{-1}$

DESI + BBN

$H_0 = (68.52 \pm 0.62)\ \mathrm{kms}^{-1}\ \mathrm{Mpc}^{-1}$

DESI + θ_* + BBN

- Consistency with SDSS
- In agreement with CMB
- In 3.7σ tension with SHOES



$\theta_* \rightarrow$ CMB angular acoustic scale

DARK ENERGY SPECTROSCOPIC INSTRUMENT
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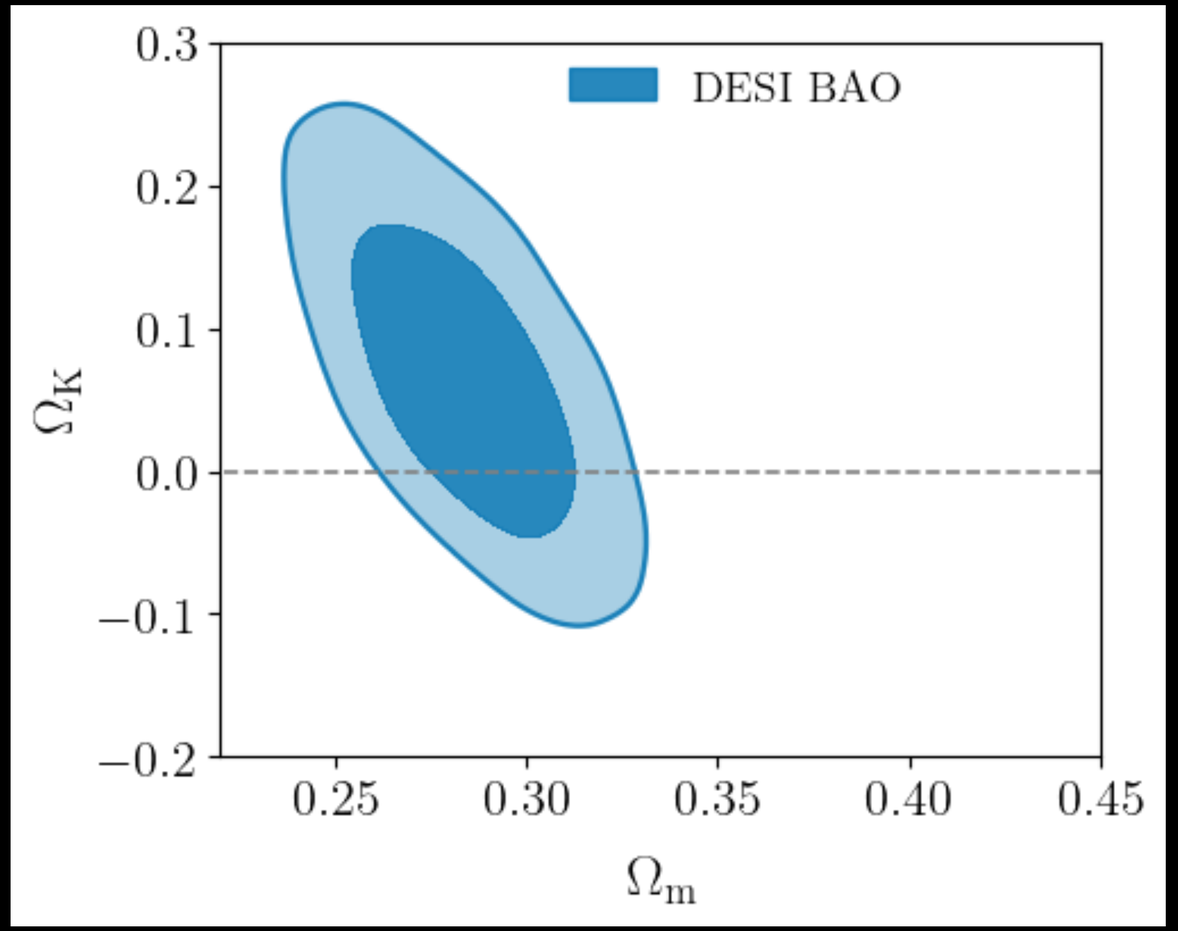
Spatial curvature

DESI + CMB measurements favor a flat Universe