POSTER SESSION

Join the discussions at the poster boards during the Coffee Break

WARP WORKSHOP DEBATE

Navigating Cosmological Tensions

Crisis or New Physics?

★ Dr. Eleonora Di Valentino ★ Prof. Marek Biesiada ★ Prof. Maciej Bilicki ★ Prof. Marek Demiański

Dr. Eleonora Di Valentino

University of Sheffield (Royal Society Dorothy Hodgkin Senior Research Fellow)

- Observational cosmology, Planck Core Team (LFI & HFI), Dark Energy Survey (DES), Vice-Chair of CosmoVerse COST Action
- Principal author of foundational reviews on cosmological anomalies
- Confronting extended theoretical models with high-precision survey data

Prof. Marek Biesiada

National Centre for Nuclear Research (NCBJ, Warsaw)

- Theoretical & observational cosmology; NCBJ representative for Einstein Telescope
- Independent astrophysical probes of cosmic expansion
- Strong gravitational lensing and gravitational wave standard sirens

Prof. Maciej Bilicki

Center for Theoretical Physics, Polish Academy of Sciences (CFT PAN)

- Co-leader Computational Cosmology Group; Chair of Science Policy Board (ESO 4MOST)
- LIGO/Virgo/KAGRA & Vera C. Rubin Observatory (LSST)
- Large-scale structure, photometric redshifts, machine learning, gravitational lensing

Prof. Marek Demiański

Faculty of Physics, University of Warsaw

- Theoretical physicist & relativistic astrophysicist
- Co-director of two European Planck mission consortia
- General relativity, early-Universe physics, CMB properties, dark matter/energy

Debate Plan & Structure

1: Opening Question

First Cracks in ΛCDM or Unresolved Systematics? Initial positions from each panelist on the most convincing—and most suspicious—evidence.

2: The Hubble Tension

Early- vs. late-Universe determinations of H_0, distance ladder calibration (JWST vs. HST), and independent probes.

3: Beyond H0 & Connections

Structure growth (S_8 / σ_8), DESI hints of dynamical dark energy (w_0 w_a), and how resolving one tension impacts the others.

4: Looking Ahead

A brief 10-year forecast on the survival of ΛCDM.

OPENING QUESTION

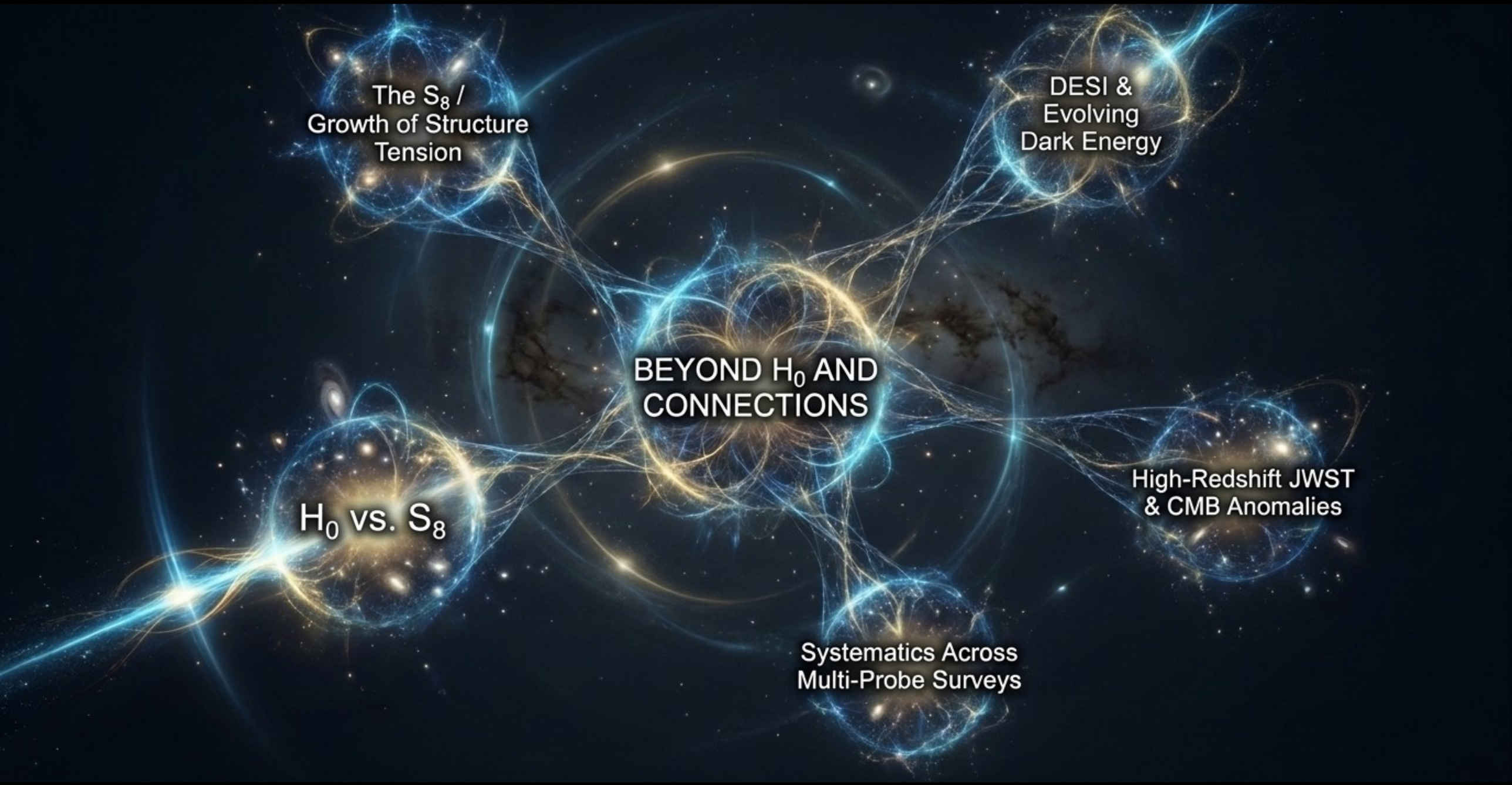
CRACKS IN ΛCDM OR SYSTEMATICS?

Looking at the current landscape of cosmological tensions—H_0, S_8, and the recent hints of evolving dark energy from DESI—do you believe we are witnessing the first genuine cracks in ΛCDM that require new fundamental physics, or are we still underestimating subtle astrophysical and data systematics?

MOST CONVINCING VS. MOST SUSPICIOUS EVIDENCE

And what single piece of evidence right now convinces you the most—or which observation do you find the most suspicious?


Distance Ladder &
JWST vs. SH0ES
Early-Time Solutions
& Sound Horizon
HUBBLE TENSION H_0:
Early vs. Late Universe
Independent
Probes
Local Environment
& Late-Time Effects
Systematics


The S_8 / Growth of Structure Tension
DESI & Evolving Dark Energy
BEYOND H_0 AND CONNECTIONS
H_0 vs. S_8
High-Redshift JWST & CMB Anomalies
Systematics Across Multi-Probe Surveys

LOOKING AHEAD

Imagine we meet again at a WARP workshop ten years from now, in **2036**—after Euclid, Vera Rubin LSST, 4MOST, Simons Observatory, and DESI have delivered their full datasets.

First: Will ΛCDM still be standing as our standard model, **yes** or **no?**

And second: Which single upcoming instrument or measurement between now and then will deliver the **decisive verdict?**