

Validation of BAO measurements in Fourier space and Cosmological Parameters inference with DES and DESI



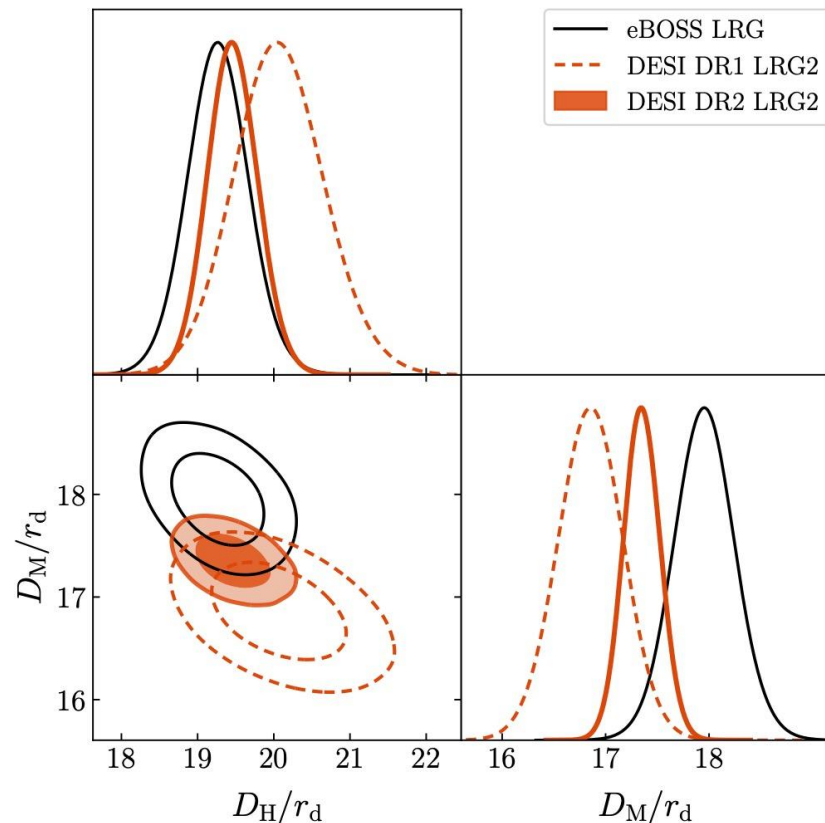
Nicola Deiosso, 4th year PhD student @ CIEMAT (Applying for Postdocs next fall!!!)

- DR2 delivers a **factor of ~2.1 improvement** in BAO precision over DR1

- **Robustness across analyses:** BAO constraints remain stable across multiple analysis variations — correlation function vs. power spectrum, 1D vs. 2D fits, modeling choices, and data splits by redshift, sky region, or magnitude.

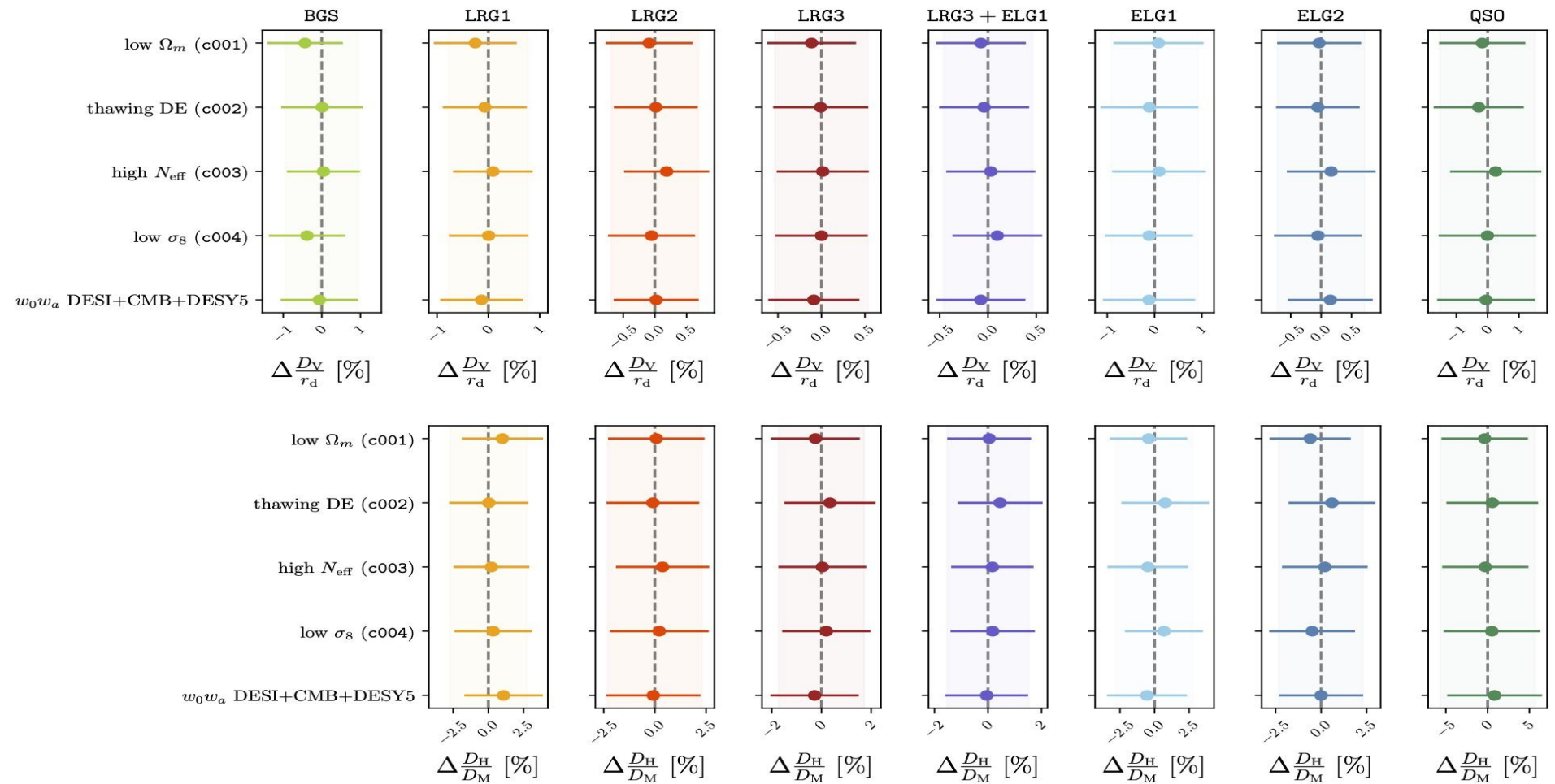
- Results are consistent under alternative cosmological models, showing negligible bias from fiducial assumptions.

- The previously noted 2.5–3 σ tension between DESI DR1 and SDSS at $z \approx 0.7$ is now consistent with statistical fluctuations; correlated systematics are found to have minimal impact.



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INSTRUMENT

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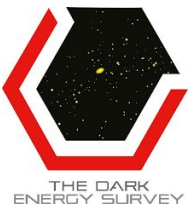
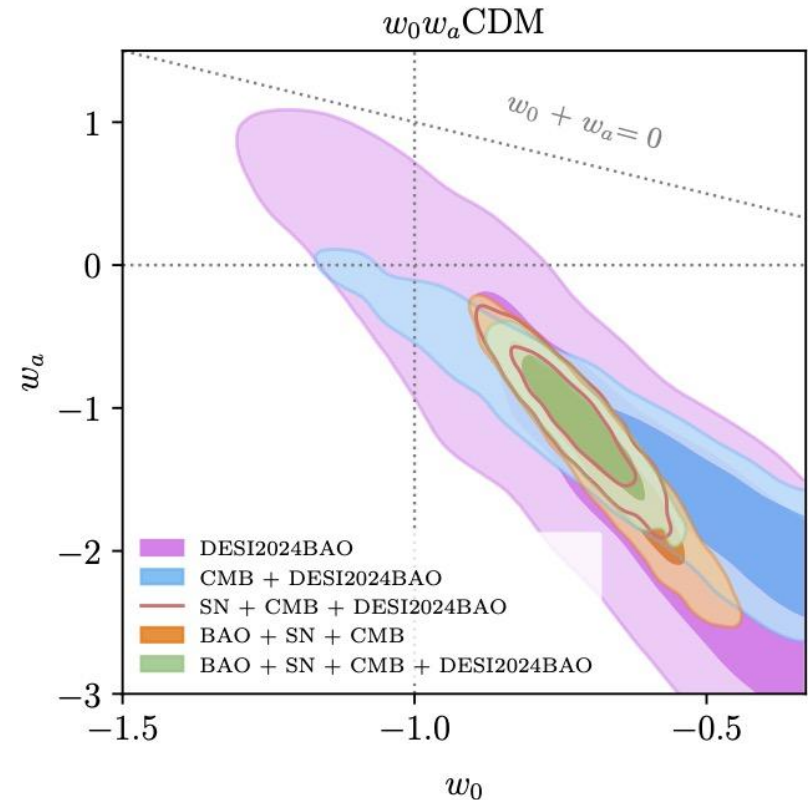


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Cosmological inference with the final DES Supernovae and BAO probes in combination with external datasets.

- Mild dataset discordance remains **unresolved** by introducing curvature ($k\Lambda$ CDM) or a constant dark energy equation of state (w CDM)
- Combining DES BAO+SN with Planck-CMB yields **tentative evidence for dynamical dark energy**, $w_0 = -0.673 \pm 0.097$ and $w_a = -1.37 \pm 0.50$ (3.2σ from Λ CDM)

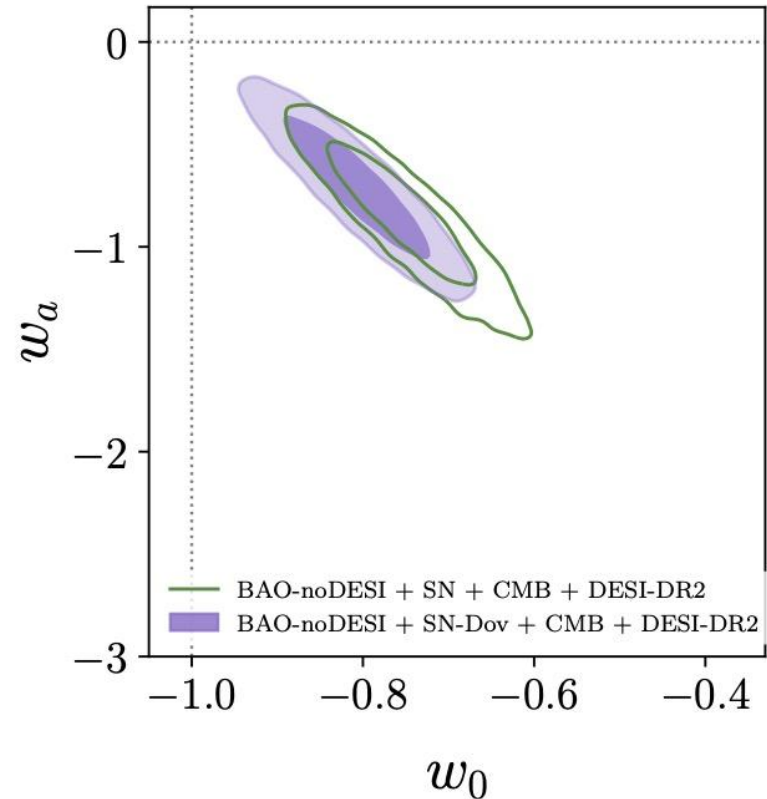


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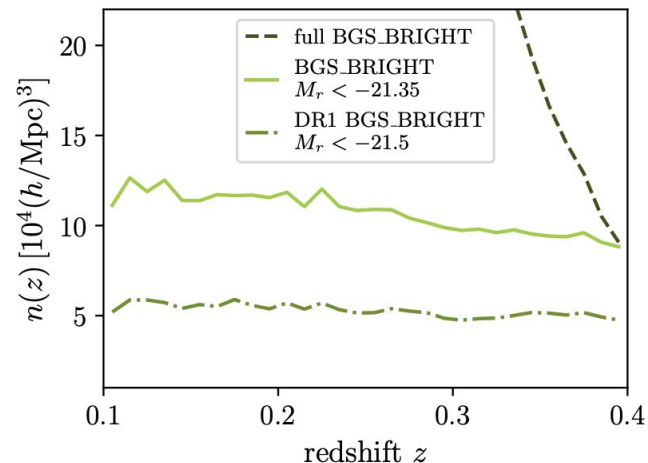
New Stuff!



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U.S. Department of Energy Office of Science

Exploring new binning solutions
for DESI DR2 BGS sample and
DR3 (still private!)



Beyond-HOD models impact on
full-shape analysis with mocks

