

Exploring Cracks (Or the Lack of Them)

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About me

PhD in SISSA

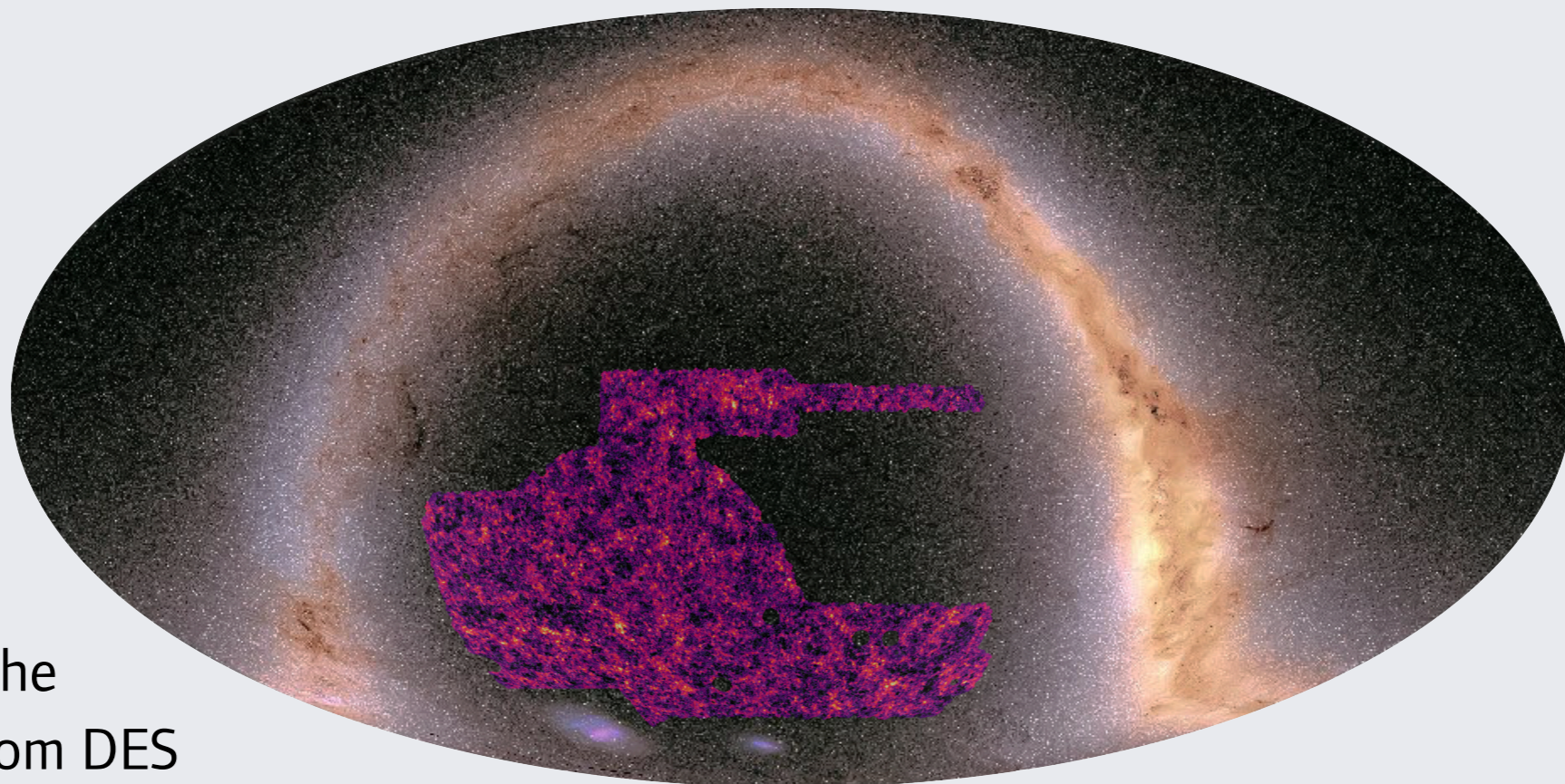
Postdoc in Chicago

Postdoc in UPenn

Assistant professor in Genova

Beyond the Standard (cosmological) model

- * Worked on Dark Energy, Dark Matter, Dark Radiation, Modified Gravity - from a cosmological perspective
- * Lead beyond standard model searches of the Dark Energy Survey (DES) for the last/legacy data release

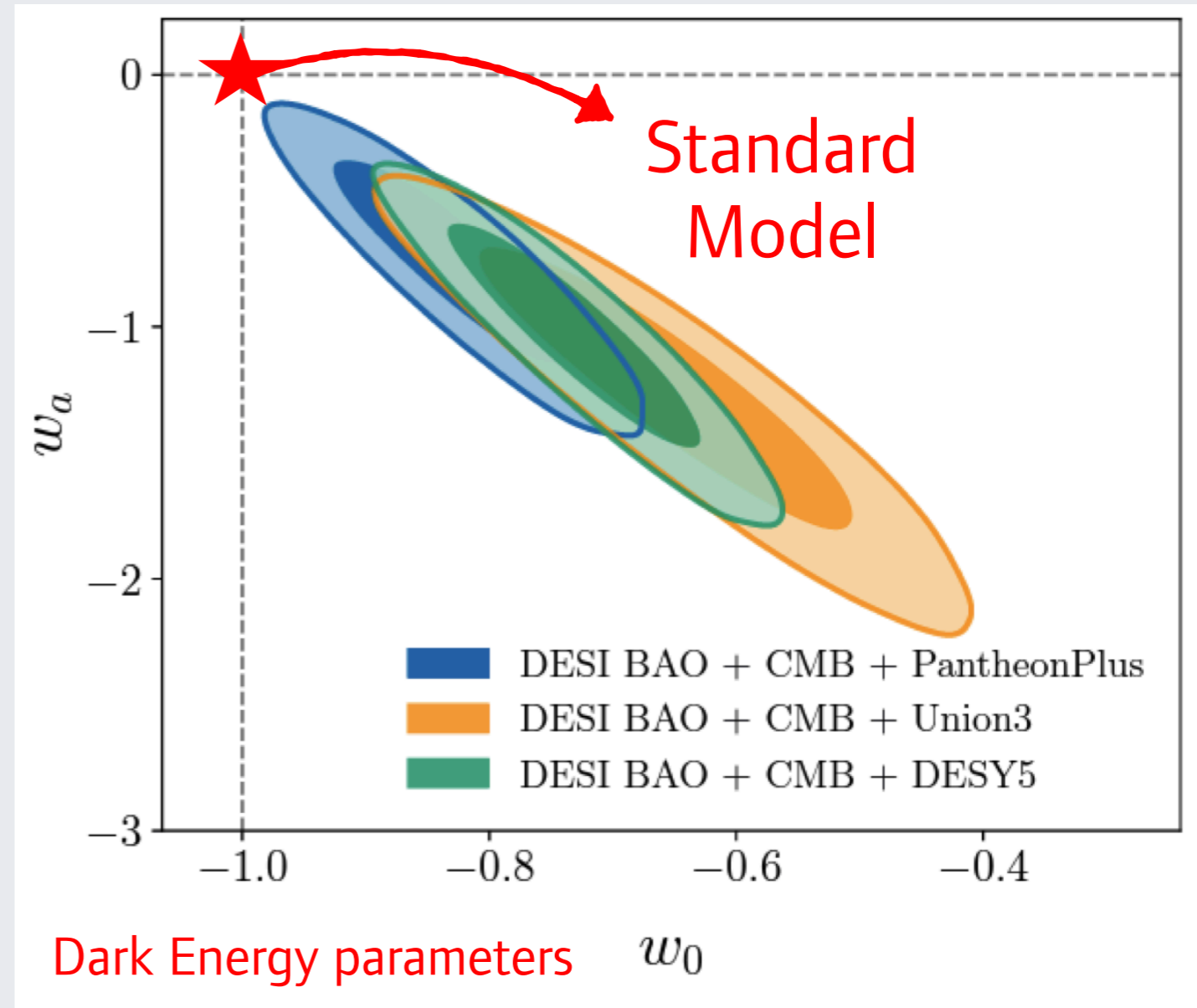


Largest map of the
Dark Universe from DES

Beyond the Standard (cosmological) model?

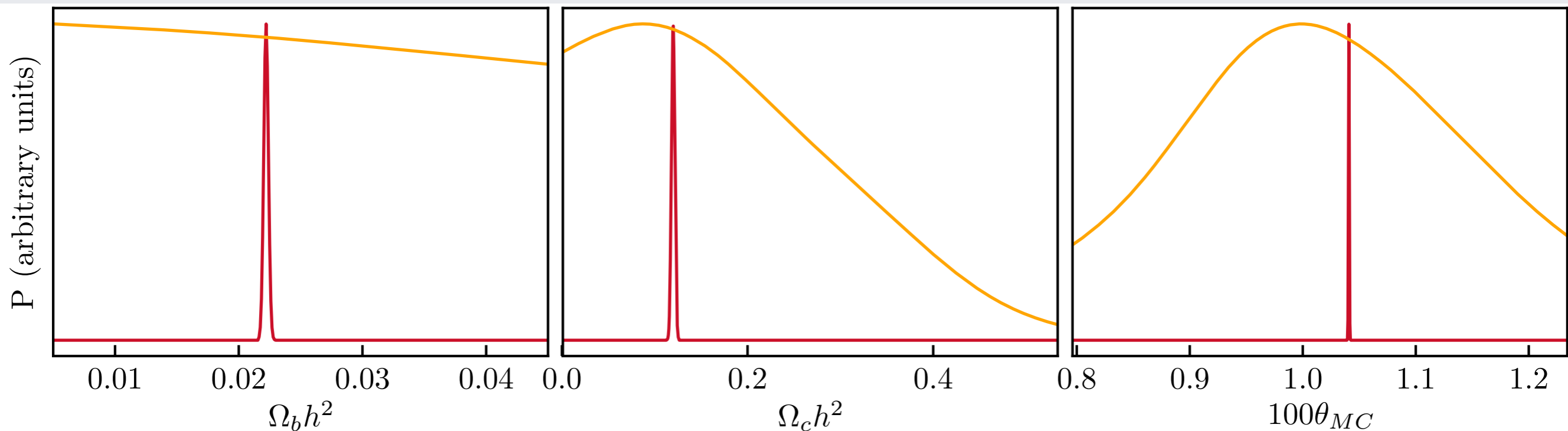
Some cracks appearing

- * Cosmological tensions over the value of the Hubble constant
- * Deviations from the standard model reported by DESI
- * DES data release imminent!



Looking for concordance/discordance

(Much) Harder than expected...



The Hubble constant tension (5 sigma +) seen from a “wrong” parameter basis...

Looking for concordance/discordance

- * Gaussian solution: arXiv:1806.04649
- * Non-Gaussian solution: arXiv:2105.03324
- * Code implementation (with examples)

```
~ pip install tensiometer
```

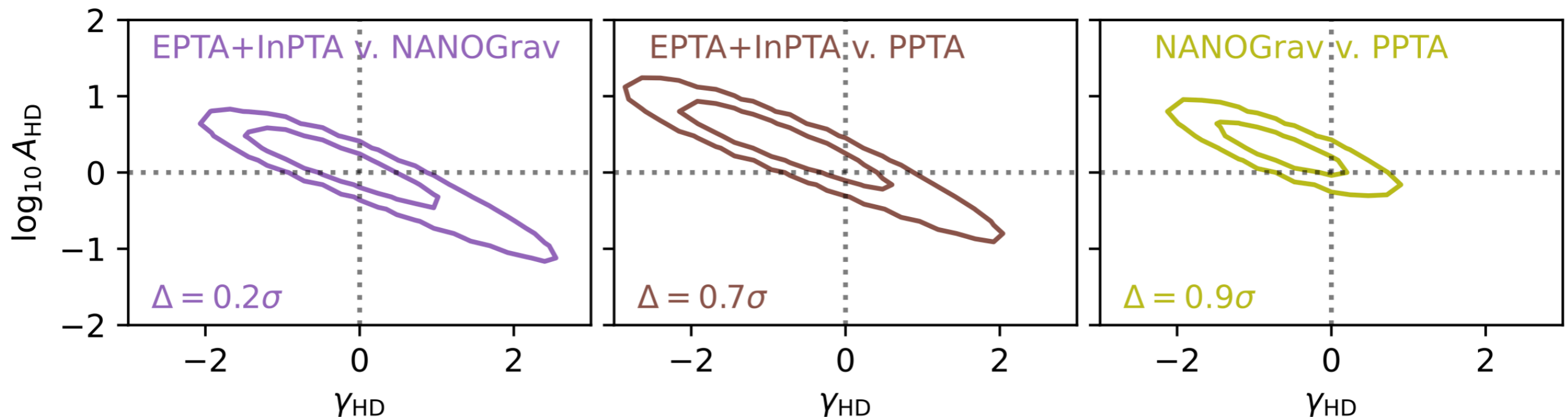


Figure 2. Difference distributions for GWB parameters between pairs of PTAs as computed by `tensiometer`. The contours show 68 and 95% of the distribution mass.

From arXiv:2309.00693 “Comparing recent PTA results on the nanohertz stochastic gravitational wave background”

Applications to GW parameter estimation

- * Strong lensing searches -> talk to Giulia Campailla (and Jose and Wayne)



Applications to GW parameter estimation

- * Strong lensing searches -> talk to Giulia Campailla (and Jose and Wayne)
- * **Yours! (?)**