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Cosmoglobe: Planck-HFI and advanced dust modelling

Monday 8 September 2025 16:00 (30 minutes)

The Cosmoglobe collaboration has conducted a groundbreaking joint analysis of the Planck-LFI, WMAP, and DIRBE data. Its unified, end-to-end, Bayesian approach provides improved control over systematic errors, leading to enhanced cosmological constraints and more accurate component maps and sky models. In this talk, I will provide an overview of the Cosmoglobe approach and highlight key results from the collaboration' s joint analysis to date. I will also present our currently ongoing reanalysis of the Planck-HFI data, which is already demonstrating areas of improvements. Additionally, I will introduce a new multi-component dust model based on the Planck-HFI NPIPE maps. This now includes a nearby dust template, a CII-correlated dust component, and an H-alpha–correlated dust component. By expanding the complexity of the dust model, we achieve a more realistic and physically motivated description of Galactic foregrounds—ultimately enabling a clearer view of the cosmic microwave background.

References

https://arxiv.org/pdf/2303.08095, https://arxiv.org/pdf/2408.10952

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