

STATISTICAL ISOTROPY AND GAUSSIANTY OF HASLAM

408 MHz MAP

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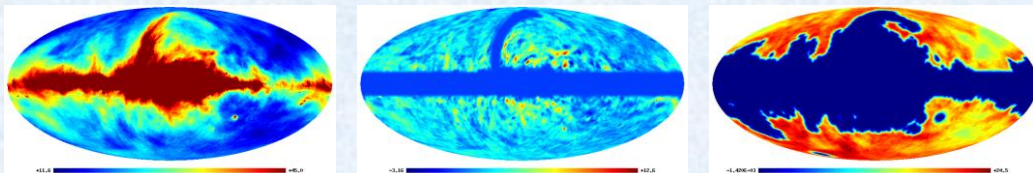


MOTIVATION

- Understanding Galactic foregrounds is necessary for detecting primordial B-modes.
- We study the **Statistical Isotropy (SI)** and **Gaussianity** of Galactic synchrotron at 408 MHz.

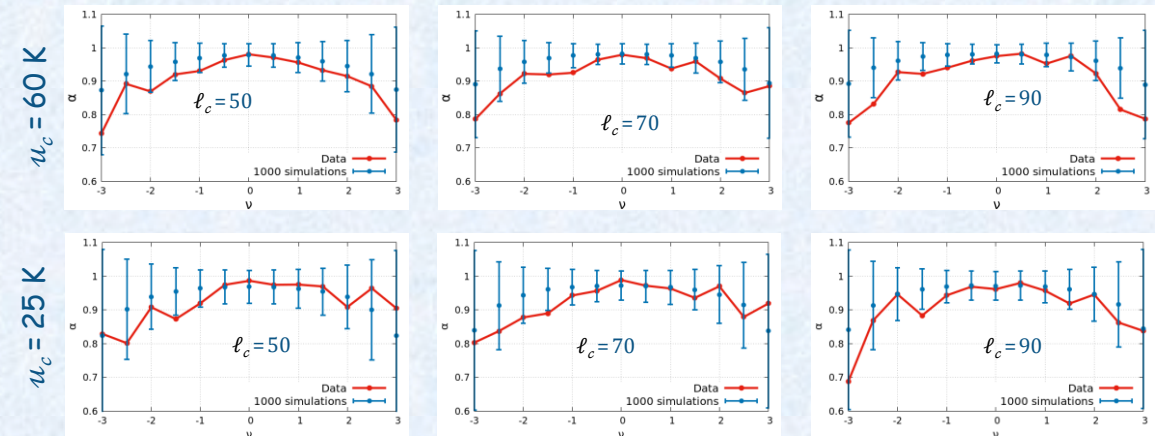
STATISTICAL TOOL – MINKOWSKI TENSORS

- We use **Minkowski Tensors (MTs)** to probe the SI of the field. Like the **Scalar Minkowski Functionals (SMFs)**, MTs can also provide the Gaussianity information.
- Additional Tools - **SMFs, PDFs, Skewness, Kurtosis**
- We use reprocessed full sky Haslam map [Remazeilles et. al 2015] after applying masks prepared at different **field values (u_c)** and bandpass filter at various **scales (ℓ_c)**.



RESULTS

- α (derived from MT) is the parameter quantifying SI.



CONCLUSION

- For $u_c < 60$ K and higher ℓ_c , Haslam field is **statistically isotropic**.
- MT and SMF results indicate **Gaussianity** for Haslam map at $u_c = 25$ K and $\ell_c > 90$.
- Our results on Gaussianity are in agreement with Ben David et. al 2015 and Rana et. al 2018.