Yun Wang 王云

Ph.D., Astrophysicist, Cosmologist

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Education

2018–2023 **Ph. D. degree**, Jilin University, Changchun, P. R. China,

department	College of Physics
specialization	Theoretical physics
field of study	The large-scale structure of the Universe
supervisor	Prof. Ping He
thesis	Applications of the continuous wavelet analysis to the large-scale structure of the Universe

2013–2017 **Bachelor degree**, Northeast Normal University, Changchun, P. R. China

department	School of Physics
thesis	Primordial Gravitational Waves: theory and progress of detection

Work Experience

since 07/2023 **Jilin University**, Changchun, P. R. China

Postdoctoral fellow supported by the "Dingxin Scholar" Program of Jilin University, working with Prof. WeiMin Song and Prof. Ping He

Publications

[1] Yun Wang and Ping He. "The continuous wavelet derived by smoothing function and its application in cosmology". In: *Commun. Theor. Phys.* 73.9 (Aug. 2021), p. 095402.

[2] Hua-Yu Yang et al. "The spatial distribution deviation and the power suppression of baryons from dark matter". In: *MNRAS* 509.1 (Oct. 2021), pp. 1036–1047.

[3] Yun Wang, Hua-Yu Yang, and Ping He. "Continuous Wavelet Analysis of Matter Clustering Using the Gaussian-derived Wavelet". In: *ApJ* 934.1 (July 2022), p. 77.

[4] Yun Wang and Ping He. "Simultaneous Dependence of Matter Clustering on Scale and Environment". In: *ApJ* 934.2 (July 2022), p. 112.

[5] Yun Wang and Ping He. "Comparisons between fast algorithms for the continuous wavelet transform and applications in cosmology: the 1D case". In: *RAS Techniques and Instruments* 2.1 (June 2023), pp. 307–323.

[6] Yun Wang and Ping He. "How do baryonic effects on the cosmic matter distribution vary with scale and local density environment?" In: *MNRAS* 528.2 (Feb. 2024), pp. 3797–3808.

[7] Yun Wang and Ping He. “Turbulence, Thermal Pressure, and Their Dynamical Effects on Cosmic Baryonic Fluid”. In: *MNRAS: Letters* 534.1 (July 2024), pp. L14–L20.

[8] MinXing Li, Yun Wang, and Ping He. “Identifying Halos in Cosmological Simulations with Continuous Wavelet Analysis: The 2D Case”. In: *ApJ* 973.1 (Sept. 2024), p. 39.

[9] Yun Wang and Ping He. “Turbulence Revealed by Wavelet Transform: Power Spectrum and Intermittency for the Velocity Field of the Cosmic Baryonic Fluid”. In: *ApJ* 974.1, 107 (Oct. 2024), p. 107.

[10] Yun Wang and Ping He. “Capturing primordial non-Gaussian signatures in the late Universe by multi-scale extrema of the cosmic log-density field”. In: *arXiv e-prints*, arXiv:2408.13876 (Aug. 2024), arXiv:2408.13876.

Code & Software

FortranCWT — The Fortran 95 codes for fast implementation of the Continuous Wavelet Transform (CWT) of the one-dimensional signals.

https://github.com/WangYun1995/FortranCWT

pyFortranCWT — Python wrappers of the FortranCWT codes created with f2py.

https://github.com/WangYun1995/pyFortranCWT

WPSmesh — The Python module that used to measure the environment-dependent Wavelet Power Spectrum (env-WPS) of the cosmic density field.

https://github.com/WangYun1995/WPSmesh

CWTextrema-Fisher — The codes for computing *the scale-dependent peak height function* (scale-PKHF) and *the scale-dependent valley depth function* (scale-VLYDF) of the cosmic-log density field, and forecasting their constraining power on cosmological parameters.

https://github.com/WangYun1995/CWTextrema-Fisher

References

✍ **Prof. Ping He** **hep@jlu.edu.cn**

A Professor at the college of Physics, Jilin University (Changchun, P. R. China).

✍ **Prof. WeiMin Song** **weiminsong@jlu.edu.cn**

The director of the Center for Theoretical Physics, Jilin University (Changchun, P. R. China).