

## Parity-Odd Power Spectra: Concise Statistics for Cosmological Parity Violation

*Friday, 8 November 2024 11:00 (20 minutes)*

Discovering primordial parity violation would have profound implications for our understanding of early Universe physics and would greatly inform inflationary models. Recent evidence of cosmic parity violation in the four-point statistics of galaxy clustering is inconclusive due to uncertainty in observational systematics and covariance estimation. In this talk, I will present a new class of observables known as Parity-Odd Power (POP) spectra, designed to probe parity violation in N-point statistics. These spectra compress the six-dimensional parity-odd trispectrum into one-dimensional power spectra, providing a computationally efficient and complementary alternative to full four-point statistics. I will present measurements from simulations featuring a specific parity-odd trispectrum, demonstrating strong agreement with semi-analytic predictions. Additionally, I will discuss how these new statistics can be interpreted in terms of the trispectrum's soft limits, highlighting their sensitivity and utility in future cosmological analyses.

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**Session Classification:** Parallel Session-LSS