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FAST-PT: An Extremely Efficient Algorithm For Cosmological Perturbation Theory

Cosmological perturbation theory is a powerful tool to model observations of large-scale structure in the weakly non-linear regime. However, even at next-to-leading order, it results in computationally expensive mode-coupling integrals. In this poster presentation, I will focus on the physics of our extremely efficient algorithm, FAST-PT. I will show how the algorithm can be applied to calculate 1-loop power spectra for several cosmological observables, including the matter density, galaxy bias, galaxy intrinsic alignments, the Ostriker-Vishniac effect, the secondary CMB polarization due to baryon flows, and redshift-space distortions. Our public code is written in Python and is easy to use and adapt to additional applications.

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