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Searching Features in Primordial Power Spectrum with Planck 2015 CHENXIAO ZENG, ELY KOVETZ, MARC KAMIONKOWSKI, Johns Hopkins Univ — Inflation is a stage of the early universe describing the exponential expansion of the space, converting microscopic primordial fluctuation in the universe into the seeds of macroscopic cosmological structure we witness today. The primordial power spectrum quantifies the primordial fluctuation in the inflationary epoch of the early universe in Fourier space, giving the power variation as a function of scale k. In this project, we plan to search features on the spectrum by using the latest observed data from the Planck satellite, allowing us to probe into the inflationary models. We mainly focus on the inflationary model with sinusoidal perturbation on the spectrum, because the amplitude ϵ and frequency ω of the perturbation relate to inflation potential, which enables us to dig into the physical property of inflation. Using a modified Boltzmann code and implementing the Markov Chain Monte Carlo method, we are able to derive constraints on the oscillation parameters.

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