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The effects of thermal inflation on small scale density perturbations

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Thermal inflation is a compelling solution to the cosmological moduli problem. In the cosmological scenario with thermal inflation, while the perturbations on large scales are preserved but slightly red shifted, the perturbations on small scales would be altered. The largest characteristic scale of thermal inflation is found at the comoving scale of the horizon size when thermal inflation changes the phase of the expansion of the universe. We focus on the evolution of density perturbations around the characteristic scale and present the small effects of thermal inflation as a transfer function. We expect thermal inflation could cause the oscillation with the amplitude of $0.09 \sim 6$ on the power spectrum around the characteristic scale, and hence small scale observations may give the signatures of thermal inflation or the constraints on thermal inflation.

Primary author: Dr ZOE, Heeseung (UNIST)

Presenter: Dr ZOE, Heeseung (UNIST)

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