

## Infrared physics in inflation and primordial perturbations

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This talk is based on our works [2, 3] and our review article [1] about loop corrections of the primordial perturbations generated during inflation. A naive perturbation theory predicts that loop corrections generated during inflation suffer from various infrared (IR) divergences. We discuss the origin of the IR divergences and explore the regularity conditions, which will restrict the possible initial states of inflationary universe.

### *References*

- [1] T. Tanaka and Y. Urakawa, *Class. Quant. Grav.* **30**, 233001 (2013) [arXiv:1306.4461 [hep-th]].
- [2] T. Tanaka and Y. Urakawa, *PTEP* **2013**, no. 6, 063E02 (2013) [arXiv:1301.3088 [hep-th]].
- [3] T. Tanaka and Y. Urakawa, arXiv:1402.2076 [hep-th], accepted in PTEP.

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