量子物理学・ナノサイエンス第 417 回セミナー

Reheating After Axion Inflation

講師　：　辻　天太 氏
総合研究大学院大学

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概　要

In modern cosmology, it is generally assumed that after inflation, the energy of the inflaton field is transferred to radiation through a process known as reheating. Axion-like particles (ALP) have recently gained attention as potential inflaton candidates, as they naturally preserve the flatness of the inflaton potential due to their shift symmetry. In our work, we explore the reheating process in the model where ALP is coupled to non-Abelian gauge field via a Chern-Simons interaction. In this scenario, energy transfer occurs resonantly, as is well-known from preheating analysis, and this process is expected to proceed efficiently. However, a significant challenge arises: even if a small amount of the inflaton remains in the universe, it could eventually dominate the energy density again. In this talk, we will discuss how reheating is completed in this context and the potential implications for the evolution of the early universe. This talk is based on the paper arXiv:2503.01228, JCAP 07 (2025), 002.

連絡教員　　須山　輝明（内線 2748）