

[お知らせ](#)

[センター長挨拶](#)

[研究グループ](#)

[メンバー Member](#)

[セミナー・研究会 Seminar & Workshop](#)

[論文一覧 Preprint](#)

[ビジターリスト Visitor List](#)

[J-PARC分室](#)

[理論センタープロジェクト](#)

[kek member only](#)

[アクセスマップ](#)

[リンク](#)



HIGH ENERGY ACCELERATOR RESEARCH ORGANIZATION
THEORY CENTER

Seminar

Cosmological applications of axion electrodynamics (in English)

SPEAKER : Dr.Toyokazu Sekiguchi

(Tokyo University, RESCEU)

DATE : November 2 (Thu) 15:30-

PLACE : meeting room 3, Kenkyu-Honkan Building 1F

The axion and axion-like particles originate from a variety of UV theories based on QFT as well as string theory. Couplings of those axions with $U(1)$ gauge fields are fairly ubiquitous. They are known to offer rich phenomenology in the very early Universe, for instance, inflation and preheating. In my talk I'm going to focus on their rolls at later epoch when the Universe is dominated by the radiation. In the first part of my talk, such an axion is identified with the QCD axion. It is recently argued that coupling of the axion to a hidden $U(1)$ field suppresses the axion CDM abundance, which can open up the axion window up to the GUT scale. The claim postulates that production of the axion fluctuations is negligible. We revisit the argument by performing 3d lattice simulations of the axion electrodynamics, where the nonlinear dynamics in the coevolution of the axion fluctuations and gauge field is incorporated to the full extent. We show production of the axion fluctuations plays a crucial roll and the suppression is moderated significantly. In the latter part, I will discuss an application to the cosmological relaxation, which we show can be compatible with reheating temperature higher than the electroweak scale.

[ページトップへ ▲](#)

[お知らせ](#) | [研究グループ](#) | [メンバー](#) | [セミナー・研究会](#) | [カレンダー](#) | [論文一覧](#) | [リンク](#) | [アクセスマップ](#)

高エネルギー加速器研究機構 〒305-0801 茨城県つくば市大穂1-1