COLLOQUIUM

Axion dark matter: A perspective for the post-inflationary scenario

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Abstract The scenario where the Peccei-Quinn (PQ) symmetry is broken after inflation has been studied with great interest in the axion cosmology community, as it leads to the formation of topological defects (strings and domain walls) that might play various intriguing roles in the early universe. Understanding the dynamics of such defects is particularly important for the precise estimation of dark matter relic abundance, which can be used to give a theoretical prediction for the axion dark matter mass. Tackling this issue requires an extensive use of numerical simulations of the PQ field in the early universe, and there has been a long-term controversy in the literature regarding the interpretation of numerical results since one has to perform an extrapolation by many orders of magnitude. In this talk, I will review the current status of the study on the axion production in the post-inflationary PQ symmetry breaking scenario. I will present some key findings from recent large scale simulations of axion strings, and discuss main challenges and possible future directions.

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3.30 pm (CEST)

Zoom link: https://ut-ee.zoom.us/j/94848742580?pwd=WTgyd3Nad2J6WFBEbHpQUGdSQnQ3QT09