## **Cosmology 2023 in Miramare**



Contribution ID: 146

Type: not specified

## THERMAL QCD AXION PRODUCTION FROM THE EARLY UNIVERSE

Friday 1 September 2023 15:00 (25 minutes)

The axion is a hypothetical new particle that could explain the absence of CP violation in QCD and has a very rich cosmological phenomenology. In particular a population of thermally produced axions is expected to exist, in addition to a cold dark matter population. I discuss a new conservative bound on the axion mass, from production in the early universe through scattering with pions below the QCD phase transition. In addition I will show that to further improve the bound and exploit the reach of upcoming cosmological surveys, reliable non-perturbative calculations above the QCD crossover are needed.

Presenter: NOTARI, Alessio

Session Classification: Parallel