Contribution ID: **61**   Type: **not specified**

Improved hot dark matter bound on the QCD axion

Wednesday, 12 April 2023 14:30 (22 minutes)

We strengthen the cosmological bound on the axion mass, by solving the momentum-dependent Boltzmann equations for axion-pion scatterings and by using a phenomenological production rate derived from pion-pion scattering data, overcoming the breakdown of chiral perturbation theory. Using present cosmological datasets we obtain $m_a < 0.24$ eV. To further improve the bound and exploit the reach of upcoming cosmological surveys, reliable non-perturbative calculations above the QCD crossover are needed.

Primary author: VILLADORO, Giovanni (Abdus Salam Int. Cent. Theor. Phys. (IT))

Presenter: VILLADORO, Giovanni (Abdus Salam Int. Cent. Theor. Phys. (IT))

Session Classification: BSM theory

Track Classification: BSM Theory