

New bounds on axion-like particles from NuSTAR observations

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Axions are hypothetical particles beyond the Standard Model. Their existence is postulated to resolve the strong CP problem in QCD. The existence of the axion-like particles should modify the visible spectra of the cosmic objects due to their coupling to photons in the presence of a magnetic field, for example, inside galaxy clusters. For this reason, they were proposed as one of the explanations for the inconsistencies between Hitomi and Chandra observations of the 3.5 keV line in Perseus cluster. Furthermore, axion-like particles could constitute the cold dark matter itself.

In this talk, we present the upper bounds on the axion-photon coupling from non-detection of imprints of such coupling in the NuSTAR observations of the NGC1275 galaxy, embedded in the Perseus galaxy cluster.

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