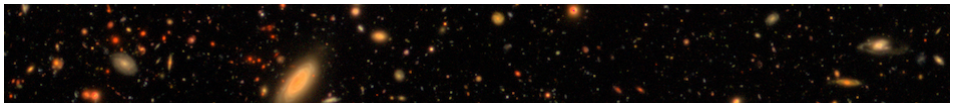

Contribution ID: **32** Type: **not specified**

First Results of DANCE from Long-Term Observation

Thursday, 30 March 2023 10:50 (20 minutes)

Axions are one of the well-motivated candidates for dark matter, originally proposed to solve the strong CP problem in particle physics. Dark matter Axion search with riNg Cavity Experiment (DANCE) is a new experimental project to search for axion dark matter. We aim to detect the rotation and oscillation of optical linear polarization caused by axion-photon coupling with a bow-tie cavity. DANCE can improve the sensitivity to the axion-photon coupling constant in the axion mass range of 10^{-17} eV < m_a < 10^{-11} eV by several orders of magnitude compared to the best upper limits at present. A prototype experiment DANCE Act-1 is ongoing to demonstrate the feasibility of our method. We will report the first results of DANCE Act-1 from 24-hour observation in this workshop. We found no evidence for axions and set 95% confidence level upper limits on the axion-photon coupling g_ag ⊠ 8 x 10^{-4} GeV^{-1} in 10^{-14} eV < m_a < 10^{-13} eV. Although the bounds did not exceed the current best limits, this work is the first demonstration of axion dark matter search with an optical ring cavity.

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Session Classification: Morning session-2