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## **DANCE: Searching for Axion-like particle dark matter with optical bow-tie ring cavity**

*Tuesday, 28 September 2021 12:00 (15 minutes)*

DANCE stands for Dark matter Axion search with riNg Cavity Experiment, and aims to detect the axion-like particle (ALP) dark matter by using laser interferometric techniques. ALPs interact with photons slightly and cause the rotational oscillation of linearly polarized light. The bow-tie ring cavity of DANCE can enhance the amplitude of the rotational oscillation by extending the effective optical path length and the interaction time. The detection sensitivity of DANCE is several orders of magnitude higher compared to the upper limit on the axion-photon coupling constant in the mass range below  $10^{-10}$  eV. We report on the current status of the prototype experiment: DANCE Act-1. The sensitivity of the current DANCE Act-1 is degraded by around 3 orders of magnitude due to the resonant frequency difference between s- and p- polarizations. We report on the plans to realize the simultaneous resonance by using an auxiliary cavity or a tunable laser. We also discuss the analysis of the obtained 10-hour data to veto the candidate peaks of the ALP dark matter.

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**Session Classification:** Tuesday AM