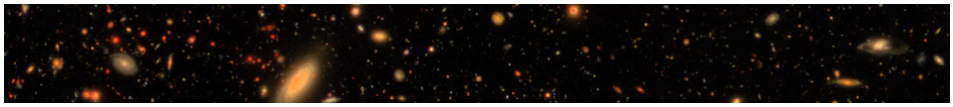

Contribution ID: **23** Type: **not specified**

Probing Virtual ALPs Using Precision Phase Measurement

We propose an experimental scheme for detecting the effects of off-shell axion-like particles (ALPs) through optical cavities. In this proposed experiment, linearly polarized photons are pumped into an optical cavity where an external time-periodic or space-periodic magnetic field is present. The magnetic field mediates an interaction between the cavity photons and ALPs giving rise to a modification in the phase of the cavity photons. The time-dependent nature of the external magnetic field prompts a novel amplification effect which significantly enhances this phase modification. A detection scheme is then proposed to identify such axion-induced phase shifts. We find that the phase modification is considerably sensitive to the photon-ALPs coupling constants for the range of ALPs mass 3e-6 eV to 44e-6 eV for time-periodic and 6e-4 eV to 6e-3 eV for space-periodic magnetic fields.

Presenter: SHARIFIAN, Mohammad

Session Classification: Afternoon session-2