

Abstract Submitted  
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**Searching for Axion-like Particles at Rare Nuclear Isotope Accelerator Facilities**<sup>1</sup> DOOJIN KIM, Texas AM University — Rare nuclear isotope accelerator facilities provide high-flux proton beams to produce a large number of rare nuclear isotopes. The high-intensity nature of their beams enables investigating dark sector particles including axion-like particles (ALPs). In this talk, I will discuss detection prospects of ALP, using its coupling to Standard Model photons, in a recently proposed experiment at RAON, the rare isotope accelerator complex for online experiment constructed in Korea. Thanks to the low 600-MeV proton beam energy, the backgrounds produced in the target and subsequently entering the detector are greatly suppressed. Together with the high intensity nature of the proton beams, I will demonstrate that RAON is capable of probing the region of ALP parameter space below the so-called “cosmological triangle”, benefiting from a high-intensity photon flux and maximizing the on-axis angular coverage. I will further show that the close proximity of the detector to the ALP production dump makes it possible to probe a high-mass region of ALP parameter space which has never been explored by the existing experiments.

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