

Probing meV Axion-Like Particles with a Microwave-Laser-Mixed Photon Collider

K HOMMA¹, Y KIRITA², T MIYAMARU¹, T HASADA¹, AND A KODAMA¹

¹*Graduate School of Advanced Science and Engineering, Hiroshima University, 1-3-1 Kagamiyama, Higashi-Hiroshima, Japan. Contact Phone: +81824247375*

²*Institute for Chemical Research, Kyoto University, Uji, Japan*
Contact Email: khomma@hiroshima-u.ac.jp

We have proposed a microwave-laser-mixed three-beam stimulated resonant photon collider, opening a window to probe axion-like particles in the meV mass range. Collisions between a focused pulse laser beam and a focused microwave pulse beam directly produce axion-like particles (ALPs) and another focused pulse laser beam stimulates their decay. Based on a concrete searching system, we will present the expected sensitivity on ALP-photon coupling if 10-100 TW class high-intensity lasers are properly combined with a conventional 100 MW class S-band klystron.