

704th ASRC Seminar

Date: 13:30 ~ 15:00 Monday, December 11

Location: 102 Meeting Room, ASRC Bldg.

Speaker: Dr. Takehito Hayakawa

(National Institutes for Quantum and Radiological
Science and Technology)

Title: Delbrück scattering using Laser Compton scattering
gamma-ray beam

-One of photon-photon interactions predicted by QED-

Abstract: Although QED is considered to be established yet, QED predicted unresolved non-linear effects, such as photon-photon interactions. However, because their cross sections are extremely small, the interactions have not been well studied. One of the photon-photon interactions is Delbrück scattering, in which an incident photon causes a pair creation of an electron and a positron and subsequently they interact with the Coulomb field by an atomic nucleus, leading annihilation. It seems an elastic scattering of a photon. However, there was a critical problem that one cannot derive only the amplitude of Delbrück scattering by the interference with other elastic scattering such as nuclear Thomson scattering and Giant Dipole Resonance. We found theoretically that it is possible to measure selectively the cross section of the Delbrück scattering using linearly polarized laser Compton scattering gamma-ray beams. We have also studied experimentally a possibility of higher-order Delbrück scattering using gamma-ray beams at NewSUBARU.

<Contact>

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