

# Toward Experimental Observations of Induced Compton Scattering

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Induced Compton scattering (ICS) is an interaction between intense electromagnetic radiation and diffuse plasma and would be an important process in astrophysical situations, such as the radio pulsed emission from the pulsars and the solar radio bursts. Although ICS modifies the radiative signal from the original emission, we have not understood the characteristics of the scattered light. We are going to explore the physics of ICS with both theoretical and experimental ways.

We have made a theoretical study of ICS for the uniform and isotropic system [S. J. Tanaka, K. Asano, & T. Terasawa, Prog. Exp. Theor. Phys. 2015, 073E01]. We found that the scattered light of ICS has characteristic spectral features. We are going to observe our theoretical prediction in laboratory. However, in order to apply the experimental situation in laboratory, we should extend our study to a non-uniform and anisotropic situation. Here, we present the results for anisotropic cases and the required plasma conditions for the laser experiment.

We impose four conditions in order to observe our theoretical prediction of ICS. We found that the laser parameters of 100TW laser in National Central University at Taiwan (NCU 100TW) is the best laser for the ICS experiment among some laser facilities in Japan and Taiwan. In this talk, we introduce details of these conditions. We are working on initial test experiments with NCU 100TW.