

Date: Jan. 26(Thu), 2012, 15:00 ~ 17:00
Location: Cooperation Center, 5F Meeting Room, W524
(研究交流棟5階会議室 W524)

Title: Quantum control of molecular tunneling ionization by phase-controlled laser fields

Speaker: 大村 英樹 氏 (産総研)
Dr. Hideki Ohmura (AIST)

Intense (10^{12} - 10^{13} W/cm²) phase-controlled laser fields consisting of a fundamental light and a second-harmonic light induce directionally asymmetric tunneling ionization and the resultant selective ionization of oriented molecules. It is demonstrated that selective ionization of oriented molecules induced by phase-controlled $\omega+2\omega$ laser fields reflects the geometric structure of the highest occupied molecular orbital. This method is robust, being free of both laser wavelength and pulse-duration constraints, and thus can be applied to a wide range of molecules.

Title: Development of a high-power few-cycle OPCPA system

Speaker: 末田 敬一 氏 (大阪大学光科学センター)
Dr. Keiichi Sueda (Photon Pioneers Center, Osaka Univ.)

Recently the generation of intense femtosecond pulse with durations below 10 fs is of great interest for many applications like high-order harmonic generation and attosecond physics. Noncollinear optical parametric amplifier (NOPA) scheme is used in a parametric amplifier to obtain broadband amplification, which reaches well beyond the limits of the high-intensity laser. This work focuses on the development of a high energy pump laser, the frontend source and the broadband NOPA setup. We have developed a chirped pulse amplification laser using Nd:glass zig-zag slab pumped by laser diodes as a higher-power pump source for intense few-cycle laser and obtained the output energy of 2.4 J with 3.7 nm bandwidth in a preliminary experiment. The experimental demonstration of NOPA is presented showing an ultrabroad gain bandwidth.