



Weekly Seminar

Higher-order harmonic generation in monolayer materials

Koichiro Tanaka

Department of Physics, Kyoto University



Time: 4:00pm, May 31, 2017 (Wednesday)

时间: 2017年5月31日 (周三) 下午4:00

Venue: Room W563, Physics building, Peking University

地点: 北京大学物理楼, 西563会议室

Abstract

Observation of higher-order harmonic generation (HHG) in solids has opened a new platform for investigating the ultrafast electron dynamics because it clearly reflects the electron motion driven by the intense sub-cycle laser fields. The electron motion is determined by characteristics of the materials and the selections of them would provide the various opportunities for controlling the HHG. Recently, we succeeded in observing HHG in transition metal dichalcogenides (TMDC) and graphene. In this talk, I will show experimental and theoretical results and discuss a future direction.

About the speaker

Koichiro Tanaka (Dr.Sci., Physics, Kyoto University, Japan, 1990) is Professor of Department of Physics and Institute for Cell-Materials Integrated Systems (iCeMS), Kyoto University. He became a research associate in the laser physics division of the Institute for Solid State Physics, The University of Tokyo after graduation in 1990. He joined an ERATO 'Hirao-Active-Glass-Project' lead by Prof. Hirao in 1995 and returned to the department of physics in Kyoto University as an associate professor in 1997. He was promoted to full professor in 2004. Since 2008, he has been working at iCeMS in Kyoto University as a principal investigator. From 2013, he returned to the department of physics. The goals of his research are to explore materials of potential dynamic switches and to establish a new scientific field 'non-equilibrium condensed matter science' that covers not only light-induced dynamical phenomena but also non-equilibrium dynamics in soft materials. His laboratory has found a number of novel light-induced phase transition phenomena and developed novel spectroscopic techniques to explore dynamics in terahertz frequency region. Novel terahertz spectroscopic methods, Time-Domain Attenuated Total Reflection Spectroscopy (TD-ATR) and terahertz microscope, have been proposed and established for the first time. One of the main topic is strong terahertz wave generation and nonlinear THz spectroscopy in solids.