

# エクストリームフォトンクスセミナー

## *Extreme Photonics Seminar*

日時: 平成20年7月11日(金)

16:00 ~ 18:00, July 11 (Fri.), 2008

場所: 研究交流棟5階会議室 W524

Cooperation Center, 5F Meeting Room, W524

題目: アト秒パルス発生計測をめざして: 北大での研究の中間報告

*For the generation and characterization of attosecond pulses in Hokudai*

講師: 関川 太郎 准教授 (北海道大学)

Taro Sekikawa, Associate Professor, Hokkaido Univ.

**要旨:** Since I moved to Hokkaido University, I have been engaging in the development of high-power few-cycle laser pulses to generate attosecond pulses, the exploration of a new characterization method of attosecond pulses, and the application of high harmonic pulses to nonlinear spectroscopy. In this seminar, I would like to talk about our recent results of these topics. For the application of attosecond pulses to spectroscopy, the increase in the pulse energy of few-cycle laser is requisite. One approach to increase the pulse energy is to improve the transmittance efficiency of a hollow fiber. The transmittance efficiency was improved to 82.5 %. After the compression using chirped mirrors, 0.66-mJ, 5-fs laser pulses were obtained. Another topic is nonlinear optical spectroscopy using high harmonics. Electron motion in doubly excited states of helium provides interesting issues in the attosecond time scale. Two-photon excitation is an efficient way for the excitation and can be realized only by coherent light sources. We have excited  $2p^2 \ ^1S$  by the two photon excitation of 19th and 21st harmonics.

題目: 放射光を用いた光物性実験による強相関電子系の電子状態

*Electronic Structure of Strongly Correlated Electron Systems Studied by Synchrotron Spectroscopy*

講師: 伊藤 孝寛 助教 (分子科学研究所)

Takahiro Ito, Assistant Professor, IMS

**要旨:** Merits of synchrotron light source, (ex). high-brilliance, continuity of photon energy, etc., plays essentially important role to study the origin of anomalous functionalities of strongly correlated electron systems (SCES), especially, magnetism, charge-density wave formation, and superconductivity. This is because the various functionalities of SCES compounds are originated from the electronic structure near the Fermi level (Fermi surface) with low-energy scale. In this seminar, the experimental way how we investigate the origin of functionalities on SCES compounds with utilizing synchrotron spectroscopy, focusing on the recent angle-resolved photoemission spectroscopy, will be introduced.

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