# Extreme Photonics Seminar

Language: English

Date : Oct.10(Wed), 2018, 14:00–15:00

Location : W524, 5F, Cooperation Center, Wako Campus, RIKEN

## Title : Extended phase matching of high harmonic generation by plasma-induced defocusing

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High-harmonic generation (HHG) of femtosecond lasers produces unique short-wavelength light pulses with femtosecond to attosecond duration. However, phase matching of HHG is very limited to low-energy harmonics. In this talk, I will exclusively discuss the phase matching challenge in HHG, review some existed phase-matching schemes, and especially present our new phase-matching scheme, called defocusing assisted phase matching (DAPM). In both experimentally and theoretically, we found that by controlling the rapid self-defocusing effect of the driving laser, the HHG phase matching cutoff can be efficiently extended. This new DAPM in a highly ionized gas medium can be applied to different targets, laser wavelengths, and pulse durations to extend high-harmonic upconversion to higher cutoff energy with higher efficiency.