アト秒量子ダイナミクスセミナー

“Mesurements and future prospects for coherent with FEL radiation”

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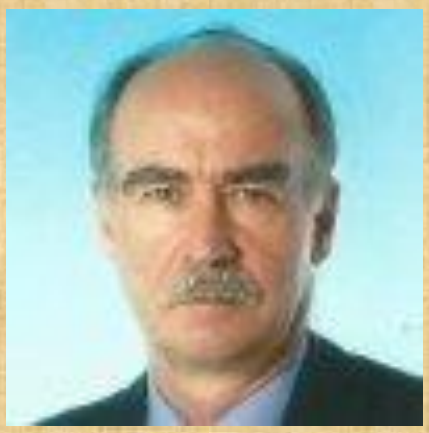

Free Electron Lasers produce ultrafast pulses of light which is intense, polarized and coherent, similar to optical lasers, and most of these properties have been exploited in FEL experiments, with one exception. While longtitudinal coherent has long been utilized in optical laser experiments, until now there have been few of FEL applications of this property. The FERMI seeds FEL is longtitudinally coherent, and as well, it can be configured to produce wavelengths of different but commensurate wavelength, which are mutually coherent, that is they have a well-defined phase relationship. This property has been exploited in recent experiments to produce overlapping pulses of first and second harmonic light with a tunable phase delay between the pulse, and perform an experiment on neon atoms. The first harmonic was set to about 63 nm and high intensity, while the second harmonic was set to lower intensity. The first harmonic gave rise to two-photon photoemission, while the second harmonic caused single photon emission. When the intensities of the two beams were set appropriately, the emitted photoelectrons interfered to asymmetric angular distributions (Brumer-Shaprio type experiment.)This asymmetry depended on the value of the phase difference between the two wavelengths, thus demonstration their correlation in phase. The relative phase was controlled with a precision of better than 10 attoseconds. This result opens the way to coherent control experiments in the short wavelength region, and some applications will be illustrated.

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場所：東 6 号館 8 階 803 会議室

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