
Seminar

“On the fly” Control of THz wave polarization using all optically induced transient metamaterials

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Ultrafast modulation of THz radiation is required, for instance, in short-range wireless communication or for preparing shaped THz transients for the coherent control of numerous material excitations. In this direction, I will present our first demonstration [1] of all-optically created transient metamaterial that allows us to manipulate the polarization of THz waveforms with sub-cycle switch-on times. To achieve this, we start with a homogeneous semiconducting substrate into which the photonic structure is imprinted all-optically, producing spatial modulation of the refractive index. The polarization-modulated pulses are potentially interesting for controlling elementary motions such as the vibration of crystal lattices, the rotation of molecules and the precession of spins.

[1] N. Kamaraju, A. Rubano, L. Jian, S. Saha, T. Venkatesan, J. Nötzold, R. Campen, M. Wolf and T. Kampfrath, Nature Light: Science & Applications, 3 (2), e155 (2014).

Wednesday, Sep 17th 2014

4:00 PM (Tea/Coffee at 03:30 PM)

Seminar Hall, TCIS