PHOTONIK SEMINAR

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Novosibirsk terahertz free electron laser: facility, user stations, experimental highlights

The Novosibirsk free electron laser is nowadays the most intense source of terahertz radiation. It generates monochromatic coherent radiation as a continuous stream of 100-ps pulses with a repetition rate of 5.6 MHz. Radiation wavelength can be, at present, gradually tuned within the spectral ranges of 120-240 µm and 40-70 µm. Average power of the radiation at the user stations reaches several hundred Watts. Unique features of NovoFEL radiation, on one hand, require development of techniques for radiation imaging and characterization and, on other hand, enable the development of new methods and techniques in many applications.

Six user stations are now under operation at the facility. In this talk I will give a brief description of the facility, user stations and equipment available to users. Experiments on interaction of intense radiation with DNA, proteins and other complex molecules will be also reviewed. Most of attention will be paid to the development of optical components, real-time imaging devices and their applications. The experiments on “classic” holography, tomography, speckle photography, Talbot metrology, and surface plasmon and attenuated total reflection spectroscopy in the terahertz range will be described.

Host: J. Darmo

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