

Laserové centrum HiLASE Vás srdečně zve na seminář

Optical convertors for high average-power, high-repetition lasers

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High average output power (~ 1 kW) lasers running at high repetition rates (~ 100 kHz) are in great demand for industrial, medical and scientific applications. If the laser radiation is delivered in picosecond pulses, the interaction with materials is mainly controlled by the radiation itself and not by subsequent heat release. The application scope of such systems can be significantly extended if the laser pulses provide also different wavelengths. For the lasers running at the infrared fundamental wavelength, such optical convertors are based on optically nonlinear crystals generating radiation on shorter (frequency up-conversion) or longer (frequency down-conversion) wavelengths. A brief theoretical background of the nonlinear behavior of selected crystals will be presented and key conclusions on the individual crystal functioning will be derived. The optical up-conversion is performed in the form of harmonics of the fundamental laser frequency. Recent achievements in this field will be presented and compared to the latest results obtained at HiLASE. The optical down-conversion is usually realized in optical parametric devices. Several unique optical parametric systems will be shown, followed by an introduction of a similar system being developed at HiLASE. Potential applications of the converted wavelengths will be indicated. The aspiration of the authors is to help in the orientation in the family of nonlinear crystals used as optical convertors and to stimulate the use of HiLASE lasers for new exciting applications.

který se bude konat v úterý 28.6. 2016 od 15:00

v přednáškové místnosti laserového centra HiLASE

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