Diploma thesis abstract

Spatial beam profile of picosecond laser at inhomogeneous pulsed-diode-pump

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The diploma thesis is devoted to research the feasible ways to implement stable and effective operation of a longitudinally pulse-diode-pump picosecond laser at repetition rate tuning within 1 kHz. The model of a picosecond Nd:YAG laser resonator, taking into account the inhomogeneous gain distribution and aberrative thermal lens in active element, was suggested. In the context of this model the beam quality parameter M^2 and the pulse energy of a picosecond laser output radiation with inhomogeneous pulsed-diode-pump at different laser resonator configurations and pump geometries were analyzed as functions of a repetition frequency of pump pulses. Optimization possibilities of a laser resonator configuration with longitudinally pulsed-diode-pump were found on the basis of the modeling results of the spatial and energy output radiation characteristics.

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