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## Formation of Laser Radiation Pulses for Encoding inFormation

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The main purpose of this work is to study the characteristics of the sequence of output pulses and the distances between the peaks of the pulses of the output radiation of a ring fiber femtosecond laser with nonlinear evolution of mode polarization for encoding information on the phase of pulses. An example of coding information for the phase of pulses is figure 1, which shows the pulse sequence corresponding to the number 101010010100 in the binary system, which is 2708 in the decimal system. Large intervals between pulses correspond to 1, and small ones to 0.

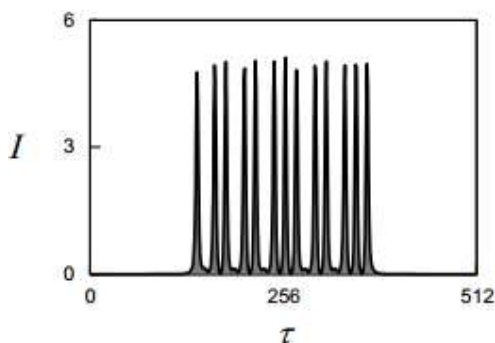


Figure 1 – Stable pulse sequence

In this paper, the mechanisms of pulse sequence formation were determined, and the stability of these pulses was investigated. Pulse sequences with a different phase were obtained by rotating the polarization of the radiation inside the resonator using wave plates. The theoretical dependences of the change in the phase of the pulses on the angle of rotation of the radiation polarization were also obtained. For more accurate adjustment of output pulse parameters, it is proposed to use liquid crystal (LC) cells as devices for controlling the polarization of radiation. Thus, the results of this paper may be of interest for the creation of future high-speed noise-free optical links operating on nonlinear principles.