

POWERFUL HIGH-VOLTAGE PULSE GENERATOR OF NANOSECOND DOUBLE PULSES

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The paper presents the results of a study of the operating modes of a pulse generator of double pulses. The design of a powerful pulse generator is made on the basis of 2 pulse transformers, a single and a double forming line connected in series. In the single-pulse mode, a single forming line is used as a transmission line, and in the two-pulse mode of accelerator operation, as an additional pre-pulse generator with a voltage amplitude of up to 200 kV. The duration of the generated voltage pulses at half maximum in both modes depends on the type of dielectric used in the forming lines. For water, the duration is 60 ns with a Double Forming Line (DFL) energy reserve of 1155 J at a voltage of 400 kV, while for glycerin it is 40 ns and the DFL energy reserve is 580 J. The synchronization system for the operation of pulse transformers provides a wide range of adjustment of the pause between pulses. The minimum value of the pause between pulses, associated with the spread in the operation of spark gaps based on compressed gas forming lines and pulse transformers, was 50 ns. The results of the operation of the generator as part of a pulsed light ion accelerator, when the first pulse served to form plasma in a diode system, are discussed.