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Magnetic field configuration of spiral high-voltage pulse generator with meander-shaped busbars

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A spiral generator is a simple device that stores electrical energy at one, relatively low voltage, and discharges the stored energy in the form of a short electrical pulse with a higher voltage than the stored one. To increase the efficiency and normal operation of the generator, it is necessary that the impedance and response time of the key be much less than the impedance and time of passage of the signal along the strip line. To solve this problem, we made a long line of the spiral generator profiled. Meander-shaped cutouts are made on the two-bus line, which separate the inductive and capacitive parts of the generator along the axis in space. As a result of profiling, the wave impedance of a long two-tire spiral line is increased three times. The paper proposes a theoretical model for a generator with a space-separated inductive and capacitive part, examines the experimentally measured parameters of the generator, and makes a comparison.
The created compact generators of nanosecond high-voltage pulses are supposed to be used for the manufacture of portable pulsed X-ray machines with explosive electron emission.

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