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Investigation of processes of radiation on a Planar Superconducting Multilayer Lattice (PSML), a new concept for devices reconstructed in a wide frequency range

The transmission fluxon waves and plasmon waves are considered on a Planar Superconducting Multilayer Lattice (PSML). These nonlinear solitary waves are presented in the form of pulses that can propagate without change of form and without the loss or acquisition of energy. The wave-resistant, they can store information, also moving in the right direction that lead to the interaction with electronic devices. Such waves can be transformed into a single pulse-fluxons. One unit of fluxons can be is transformed in other form of signal which is required for the electronic systemsю. The effects utilization on PSML is most promising. Given by these effects can are constructed low-noise generators and also detectors constructed in a wide frequency range from a submillimeter part of the spectrum up to far-infrared area. In low frequencies this range is limited by the conditions of the transition stability and fluctuations and is consistent with the frequency of about 10 GHz. In addition, the movement and vibrations of fluxons in Josephson junctions is accompanied by stimulated emission in the range up to 10 THz. So that PSML is expected to use in applications such as proximity detectors of synchrotron radiation, including such as upper and low threshold devices, optical layered switches and perhaps bistable layered switches. However, many of the promising candidate materials exhibit nonlinearities with non-quadratic power laws and materials exhibit saturation effects. A saturation power of these devices can be brought up to 10 micro-watt under a limiting sensitivity (3 THz at Beta<1).

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