

Superfast fronts of impact ionization in initially biased $p^+ - n - n^+ -$ structures

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Ionization fronts of streamer type also occur in high-voltage semiconductor switches. Such switches are investigated and produced by the group of I. Grekhov at Ioffe-Institute St. Petersburg.

Besides the streamer-Laplacian instability, additional instabilities are generated by the constrained geometry and the external resistive load in the electric circuit. In a combination of analytical and numerical approach, we have gained new theoretical insight into the operation mode of these switches.