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On the Possibility of Creating Sources of Induced Short-Wave Radiation Based on Channeling Electrons in an Optical Lattice

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The article discusses the prerequisites for the implementation of stimulated laser generation of short-wave (including X-ray) radiation based on a system of fast electrons channeled in a standing light wave. It is shown that considering all the features of the quantum states of such particles makes it possible to determine the conditions for implementing such short-wave lasers. To optimize such systems, it is necessary to use long hollow optical waveguides, inside which a high-current beam of relativistic electrons moves.

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