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Particle acceleration by stimulated emission of radiation near a solid-state active medium

Valery Berezovsky, Hanna Alam, Levi Schächter *

Department of Electrical Engineering, Technion – Israel Institute of Technology, Haifa 32000, Israel

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ABSTRACT

We report acceleration of electrons moving in free space near an active Nd:YAG slab. The power of a non-relativistic beam of electrons has increased by more than 30% when the medium was excited. It is demonstrated experimentally that the energy gained by the electrons is linearly proportional to the energy stored in the medium. Moreover, the energy gain traces closely the population inversion inferred by monitoring the spontaneous radiation.