PACS: 52.35.Mw, 52.50.Jm, 52.65.Rr

# Parametric decay and mode conversion in the interaction of a laser wave with a plasma in an inhomogeneous magnetic field

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*Received 27.09.2023; revised 16.10.2023; accepted 31.10.2023*

***The process of resonant interaction of a laser wave at a doubled upper-hybrid frequency with a plasma in a nonuniform magnetic field is studied. The magnetic field was assumed to be linearly dependent on the coordinate along the direction of laser pulse propagation with the condition of resonance at the center of the plasma layer. It is shown that in such an interaction the laser wave decays into two upper-hybrid plasmons with the excitation of Bernstein modes. The occurrence of an electromagnetic wave at the upper hybrid frequency of the plasma reflected from the boundary is detected. It is concluded that the reflected wave is excited during the interaction of Bernstein modes with upper-hybrid plasmons, since it disappeared in the case of a cold plasma layer. The dependence of the average electron energy acquired during the development of the instability on the gradient of the external magnetic field is studied.***

*Keywords*: laser radiation, upper hybrid frequency, inhomogeneous magnetic field, Bernstein modes.

DOI: 10.51368/2307-4469-2023-11-6-491-495

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