

ON THE POSSIBILITY TO CREATE A PLASMA
AMPLIFIER WITH DIRECT RADIATION
OF ELECTROMAGNETIC WAVES

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S u m m a r y

A model of constructing a plasma amplifier with direct radiation is proposed. The energy of amplified oscillations is coupled out due to the transition radiation at the boundary of a plasma which is confined by a constant magnetic field. For this purpose, the beam injected into the plasma column confined by the longitudinal magnetic field should be slightly defocused. Paraxial electrons of the beam provide the beam-plasma interaction and amplification. Defocused peripheral electrons modulated by the high-frequency field created in the system move along spiral orbits. Thus, they periodically come into plasma column and come out from it, each time exciting the transition radiation. The latter can provide a sufficiently high effectiveness of the transformation of the beam modes into electromagnetic waves.