

Abstract Submitted
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Resonant Excitation of Millimeter Wave by Beating two Lasers in a Plasma Embedded with a Magnetic Wiggler¹ VIJAY GARG, Department of Physics, M.M. College, Modinagar-2010004, U.P India — Two high power lasers of frequencies ω_1 and ω_2 , co-propagating in a semiconductor embedded with a magnetic wiggler, produce electromagnetic radiation at the difference frequency ($\omega_1 - \omega_2$). The lasers exert a ponder-motive force on the electrons at the difference frequency, giving them longitudinal oscillatory velocity. This velocity beats with the magnetic wiggler to produce a transverse current, driving a millimeter wave at a frequency $\omega_1 - \omega_2$ and wave number $k_1 - k_2 + k_w$ where k_1 and k_2 are the wave number of the lasers and k_w is the wave number of the wiggler. For a suitable value of wiggler wave number the process becomes a resonant one, giving high efficiency of millimeter wave generation.

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