

Abstract Submitted  
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**Generation of Langmuir turbulence and stochastic acceleration  
in laser beat wave process** PRERANA SHARMA, R.P. SHARMA, IIT, Delhi

— This paper investigates the filamentation process of two co-axially propagating laser beams in a collisionless plasma. On account of the ponderomotive nonlinearity, two laser beams affect the dynamics of each other and cross-focusing takes place. The initial Gaussian laser beams are found to have non-Gaussian structures in the plasma. Using the laser beam and the plasma parameters, appropriate for beat wave process, the filaments of the laser beams have been studied. Using these results, the Langmuir wave (LW) excitation at the beat wave frequency (when the laser beams are having filamentary structures) has been studied. The excited LW is modeled with the help of a driven oscillator and it is found that the excited LW is not a plane wave; rather it has a turbulent structure. We have obtained the power spectrum of the excited beat wave (Langmuir wave) and calculated the spectral index. The stochastic electron acceleration has been studied in the presence of this Langmuir turbulence and relevance of these results to beat wave process has been pointed out.

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