

Abstract Submitted
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Features of Gaussian Beam Traversing in Complex Plasma RUCHI SHARMA, SURESH C. SHARMA, Delhi Technological University — A theoretical model describing the effect of dust on the self-focusing of the amplitude modulated laser beam propagating in a complex plasma has been proposed. For non-linear irradiance of the beam, electrons carry the non-uniform temperature results in more accretion of electrons on dust particles close to the axis. This leads to distorted electron density passage near the axis even after considering the ambipolar diffusion and direct the electromagnetic beam. In this analysis, while considering non-linear ohmic heating, dust charge balance, elastic and inelastic collision of constituent particles, momentum and energy balance equations have been solved simultaneously to govern the relation between the beam width parameter and distance of propagation. The dependence of beam width parameter with dimensionless propagation distance have been evaluated for different values of laser beam spot size, modulation index and different amplitude of the beam. Numerical calculations have been done to calculate the self-focusing length of the amplitude modulated beam propagating in the presence of dust particles. It is found that the self-focusing effect increases with the amplitude and modulation index of the beam but behave inversely with laser beam spot size.

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