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Impact Of Self-Focused High Power Beam on Stimulated Raman Scattering in Collisional Magnetized plasma

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In this paper the Impact of self-focused high-power beam on stimulated Raman Scattering in collisional magnetized plasma is investigated. When the incident beam moves in the direction of an externally applied static magnetic field. There are two modes of propagation—the extraordinary and ordinary modes. Now the shift in the static magnetic field's strength has an impact on the redistribution of carriers .this distribution of charge carrier is carried out due to non-uniform heating , which further alters the in variation in density profile in a direction perpendicular to pump beam axis. The density profile also modifies the three waves that are involved in the process: 1.The Incident beam or the pump beam, 2. The electron plasma wave, and 3.The back-scattered beam. Based on these modifications, the second-order differential equations is obtained and studied for the beam width parameters of these 3 waves - the pump laser beam or the Input beam , the Electron Plasma Wave, and the back-scattered beam, also the expression for Back reflectivity is investigated in this paper . Additionally, The RK4 method is used to perform numerical computation of nonlinear ordinary differential equations (ODEs) so that the effects of altering the laser plasma parameters as well as the externally applied magnetic field on the SRS back-reflectivity and beam widths of the different waves engaged in the process can be explored .

References

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