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SELF-FOCUSING OF COSH–GAUSSIAN LASER BEAM THROUGH COLLISIONAL PLASMAS: EFFECT OF LINEAR ABSORPTION

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The current study explores Self-focusing of Cosh–Gaussian (ChG) laser beam through collisional plasma. Here, we have also taken in to account effect of linear absorption. The non-uniform heating in collisional plasma causes carriers redistribution resulting in generation of density gradients in plasma. This density gradient in fact causes self-focusing of beam. The wave equation for electric field vector of laser beam is solved using paraxial approach to obtain 2nd order ODE for beam waist of laser beam. Since, it is not possible to solve this differential equation through direct method. So, this differential equation is numerically solved to investigate the change in beam waist of beam with dimensionless propagation distance. Effect of change in laser intensity, plasma density, decentered parameter and absorption coefficient on laser beam's waist is also explored.

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