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Self Focusing of Rippled Elliptical q-Gaussian Laser Beam in Plasma with Axial Density Ramp

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Theoretical investigation on self focusing of an elliptical -Gaussian laser beam carrying an intensity ripple over its cross section, in plasma with axial density ramp has been presented. The optical nonlinearity of plasma has been modeled by the relativistic mass nonlinearity of plasma electrons in the field of laser beam. Using Variational theory approach, semi analytical solutions of the wave equations for the fields of main beam and that of ripple have been obtained. Emphasis has been put on the evolutions of the beam widths of main beam and that of ripple.

Topics

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