

Nonlinear Characteristics of an Intense Laser Pulse Propagating in Partially Stripped Plasmas

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Abstract: The nonlinear optic characteristics of an intense laser pulse propagating in partially stripped plasmas are investigated analytically. The phase and group velocity of the laser pulse propagation as well as the three general expressions governing the nonlinear optic behavior, based on the photon number conservation, are obtained by considering the partially stripped plasma as a nonlinear optic medium. The numerical result shows that the presence of the bound electrons in partially stripped plasma can significantly change the propagating property of the intense laser pulse.

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Key words: transverse focusing, photon acceleration, longitudinal bunching

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