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Self-Phase Modulation Effects as Laser Produced Plasma diagnostics

High intensity laser radiation propagating in a plasma suffers deep changes concerning both its spatial and spectral distribution. These changes can give information about the kind of the developed interaction. In particular the Self Phase Modulation (SPM) of the impinging laser radiation is currently used to evidence fast variation of the electron plasma density, produced for example by the target ionization or ponderomotive forces. The SPM effects dramatically increase as the laser pulse decreases and this is the reason for why they have to be specially considered in the experiments in which femtosecond laser pulses are used.

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