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Computer diagnostics of an optically dense plasma from absorption spectra

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Abstract

An algorithm is constructed for solving the problem of diagnostics of an optically dense plasma from the absorption spectra of isolated self-reversed spectral lines. The basic parameters taken are the width of the absorption line at the level 0.8Jo, where Jo is the intensity of the transmitted radiation, and the asymmetry of the absorption profile. The problem is solved by computer with the iteration method on the basis of the transverse pattern of the spectra. The radial variation of the concentration of absorbing atoms, of the electron concentration, and of the thin layer profile is determined. The method is applied to a low-voltage pulsed discharge, 2 msec in length, with a time resolution of 0.10 msec. © 1982 Plenum Publishing Corporation.

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