

EFFICIENCY OF OPTIMIZATION TOOLS FOR TOKAMAK PLASMA POLARIMETRY DATA INVERSION

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Tokamak plasma polarimetry is based on the fact, that the polarization state evolution depends on plasma density distribution and magnetic field structure along the electromagnetic probing beam path. Based on equations of Stokes vector formalism or developed by authors angular variable technique and complex amplitude ratio formalism, the computation of the state of polarization ellipse after crossing the plasma for given plasma parameters is straightforward. In this paper is discussed reverse problem – plasma parameters reconstruction by means of multichannel polarimetric measurement results. Two optimization tolls for polarimetry data inversion, gradient method and Levenberg-Marquardt algorithm, are considered. Numerical simulations revealed that both methods provide acceptable accuracy of inversion after several iterations, with comparable calculation rate.