

Simulation of nonstationary plasma

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Under conditions of strong nonequilibrium, the rates of change in the thermodynamic quantities in the plasma and the flux of external radiation might be faster than the rates of elementary radiative and collisional processes, therefore, it is necessary to solve the system of nonstationary rate equations to define ion population and radiation properties. These are complicated calculations, but only this way the nonstationary effects can be taken into account arising from the ultrashort impact of laser or X-ray pulses, or the frozen ionization, which occurs during the rapid cooling of the low-density plasma. The report presents solving for some specific cases, where taking into account nonstationarity is of significant importance using the THERMOS software package [1–3].

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- [1] THERMOS — Software package and database <http://keldysh.ru/thermos/en>
- [2] Vichev I, Solomyannaya A, Grushin A and Kim D 2019 *High Energy Density Physics* 100713
- [3] Kim D, Vichev I, Solomyannaya A and Grushin A 2021 *Keldysh Institute preprints* 97