

# Electrical resistivity and thermal conductivity of liquid aluminum in the two-temperature state

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We present calculation of the electrical resistivity and thermal conductivity of liquid aluminum in the state, characteristic for the initial stage of the interaction of femtosecond laser irradiation with metals. In this state the temperature of electrons differs from the ion temperature. It often occurs in the molten metals. We have calculated the structural factor of liquid aluminum with the help of the quantum molecular dynamics and used the Ziman approach for the calculation of the electron–ion collision frequencies. Electrical resistivity and thermal conductivity obtained agree well with those received by the use of the combination of quantum molecular dynamics, density functional theory and Kubo–Greenwood approach [1–3]. Work was supported by the Russian Foundation for Basic Research (grant 16-02-00864) and program of the Presidium RAS “Thermophysics of high energy densities”.

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[2] Recoules V and Crocombette J P 2005 *Phys. Rev. B* **72** 104202

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