

**Berezin, A. V.; Markov, M. B.; Parot'kin, S. V.**

**On the particle method for electrons in an inhomogeneous scattering medium.** (English. Russian original) [Zbl 1478.78025](#)

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Summary: A Cauchy problem for the kinetic and electrodynamic equations describing the self-consistent electromagnetic field of an electron beam propagating in a medium with discontinuous scattering properties and electrophysical characteristics is considered. An interpretation of the generalized solution as a particle method for the numerical solution of the kinetic equation in a self-consistent field is presented. An approach to the numerical solution based on smoothing the coefficients of the kinetic equation and considering its solution in the class of compactly supported generalized functions is proposed.

**MSC:**

[78A45](#) Diffraction, scattering

[78A35](#) Motion of charged particles

[65M75](#) Probabilistic methods, particle methods, etc. for initial value and initial-boundary value problems involving PDEs

[78M99](#) Basic methods for problems in optics and electromagnetic theory

[82C40](#) Kinetic theory of gases in time-dependent statistical mechanics

[82C22](#) Interacting particle systems in time-dependent statistical mechanics

[35Q83](#) Vlasov equations

[35Q61](#) Maxwell equations

[35R09](#) Integro-partial differential equations

**Keywords:**

[electron](#); [kinetic equation](#); [electromagnetic field](#); [generalized function](#); [Dirac measure](#)

**Full Text:** [DOI](#)

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