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Newtonian limit and trend to equilibrium for the relativistic Fokker-Planck equation.

(English) [Zbl 1288.82048](#)

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The Fokker-Planck equation is considered in the paper. The behavior of solutions to the relativistic Fokker-Planck equation for the case when the speed of light $c \rightarrow \infty$ is studied. Under some additional assumptions on the initial data it is shown that its solutions converge in L^1 -norm to solutions of the non-relativistic Fokker-Planck equation.

Another remarkable fact concerning the behavior of solutions to the relativistic Fokker-Planck equation is its exponential convergence as $t \rightarrow \infty$ to the global thermodynamical equilibrium state in L^2 -norm.

As a remark, the reviewer would like to suggest that the restriction $\gamma > 7$, $w > 9$ on the initial data is purely technical and apparently could be avoided.

Reviewer: Alexander Mikhajlovich Blokhin (Novosibirsk)

MSC:

[82C31](#) Stochastic methods (Fokker-Planck, Langevin, etc.) applied to problems in time-dependent statistical mechanics

Cited in **2** Documents

[35Q84](#) Fokker-Planck equations

[35Q75](#) PDEs in connection with relativity and gravitational theory

[83A05](#) Special relativity

Keywords:

Fokker-Planck equation; relativistic case; nonrelativistic case; global thermodynamical equation

Full Text: [DOI](#)

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