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Stochastic mechanics of a relativistic spinless particle. (English) Zbl 0712.46041
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Summary: An extension of Nelson's stochastic mechanics to the relativistic domain is proposed. To each pure state of a spinless relativistic quantum particle corresponds a Markov process $t \mapsto \xi_t$, where the random variable ξ_t represents, at every time t , the space position of the particle in the sense of Newton and Wigner. The process $t \mapsto \xi_t$ is not a diffusion but the usual Nelson's theory is restored in the nonrelativistic limit.

MSC:

46N50 Applications of functional analysis in quantum physics
81P20 Stochastic mechanics (including stochastic electrodynamics)

Cited in **6** Documents

Keywords:

Nelson's stochastic mechanics; relativistic domain; pure state of a spinless relativistic quantum particle; Markov process

Full Text: [DOI](#)

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