
The stationary solution of the equation for the characteristic function describing Brownian motion under the influence of a Poisson random process

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The description of Brownian motion under the action of the Brownian particle Poisson random process is given. An equation for the characteristic functions of the momentum fluctuations of a Brownian particle and found its solution in the stationary case is explained. In the first approximation of distribution function of the fluctuations of a Brownian particle momentum and defined its first four moments and cumulant. Calculated skewness and kurtosis of the distribution function are considered. The dependence of the Kullback measure of the intensity of the Poisson process and kurtosis of the distribution function are covered. Ways to determine the intensity of the Poisson process on the results of long-term measurements of current fluctuations in electrolytes are proposed.

Keywords: *Brownian motion, momentum fluctuations, Wiener process, the Poisson process, the characteristic function of the distribution function.*

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