



Contribution ID: 57

Type: poster

Selected properties of integrated stochastic processes

Thursday, September 6, 2018 3:00 PM (3 hours)

Brownian motion (Wiener process) and Ornstein-Uhlenbeck processes are two basic stochastic processes, which are frequently, among others, used in the statistical physics. We consider the full stochastic dynamics, i.e. a situation when a particle is described by the position and velocity. It is assumed that velocity changes according to Wiener or Ornstein-Uhlenbeck processes. Consequently, a particle position is described by an integrated stochastic process. We examine such processes in the free case. Moreover, the problem of first escape from a finite interval for integrated stochastic processes is studied. We show similarities and differences between both processes. These differences arise due to introduction of damping and are especially well visible for a free particle. In the studied range, the problem of first escape seems to be less sensitive to the process describing evolution of the velocity.

Primary author: CAPALA, Karol (M. Smoluchowski Institute of Physics, Jagiellonian University, Kraków, Poland)

Co-author: Dr DYBIEC, Bartłomiej (M. Smoluchowski Institute of Physics, Jagiellonian University, Kraków, Poland)

Presenter: CAPALA, Karol (M. Smoluchowski Institute of Physics, Jagiellonian University, Kraków, Poland)

Session Classification: Poster session