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Dynamic tsallis entropy for simple model systems

Khusnutdinov N., Yulmetyev R., Emelyanova N.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

In this paper we consider the dynamic Tsallis entropy and employ it for four model systems: (i) the motion of Brownian oscillator, (ii) the motion of Brownian oscillator with noise, (iii) the fluctuation of particle density in hydrodynamics limit as well as in (iv) ideal gas. We show that the small value of parameter non-extensivity $0 < q < 1$ acts as a non-linear magnifier for small values of the entropy. The frequency spectra become more sharp and it is possible to extract useful information in the case of noise. We show that the ideal gas remains non-Markovian for arbitrary values of q .
