

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Autonomous Brownian motors driven by nonadiabatic variation of internal parameters ALEX PLYUKHIN, Saint Anselm College — We study a family of autonomous motors based on a Brownian particle driven from thermal equilibrium by periodic in time variation of the internal potential through which the particle interacts with molecules of the surrounding thermal bath. We demonstrate for such motors the absence of a linear response regime: The average driving force and drift velocity are shown to be quadratic in both the frequency and amplitude of the variation. The adiabatic approximation (of an infinitely slow variation) and the leading correction to it (linear in the variation's frequency) lead to zero drift and are insufficient to describe the motor's operation.

Alexander Plyukhin
Saint Anselm College

Date submitted: 02 Nov 2015

Electronic form version 1.4