

Abstract Submitted  
for the MAR08 Meeting of  
The American Physical Society

**Modeling an efficient Brownian heat engine** MESFIN ASFAW TAYE, National Central University Jhongli, 32054 Taiwan — We investigate the effect of subdividing the ratchet potential on the performance of a tiny Brownian heat engine that modeled as a Brownian particle hopping in a viscous medium in a sawtooth potential (with or without load) assisted by *alternately* placed hot and cold heat baths along its path. We obtain analytic expression for the steady state current. The expressions for velocity, efficiency and coefficient of performance of refrigerator are reported for different number of barrier subdivisions. We find that the velocity, the efficiency and the coefficient of performance of the refrigerator maximize as the number of barrier subdivisions increase.

Mesfin Asfaw Taye  
National Central University Jhongli, 32054 Taiwan

Date submitted: 11 Dec 2007

Electronic form version 1.4