北京大学量子材料科学中心

Weekly Seminar



We study the validity of quantum Jarzynski equality in the context of the rapidly expanding one-dimensional quantum piston. Utilizing exact solutions of the time-dependent Schrodinger equation, we find that the evolution of the wave function can be decomposed into static and dynamic components, which have simple semiclassical interpretations in terms of particle-piston collisions. We show that nonequilibrium work relations remain valid at any finite piston speed, provided both components are included, and we study explicitly the work distribution for this model system.

Haitao Quan obtained his degree and his PhD from Central South University and Chinese Academy of Sciences in 2002 and 2007, respectively. From 2007 to 2010 he was a postdoctoral fellow in Los Alamos National Laboratory. From 2010 to 2012 he was a research associate at the University of Maryland, college park. He joined school of physics, Peking University as a junior faculty in Dec. 2012. His main research