

Abstract Submitted  
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**Stochastic Dynamical Modeling of Single-Molecular Properties of Actomyosins** HYUNG-JUNE WOO, University of Nevada, Reno — A minimal stochastic dynamical model of the free energy transduction and force generation in non-processive motor protein complexes such as actomyosins will be discussed. The overall operation of a motor is described as diffusive motions of the system on two conformational free energy curves coupled to each other by ATP hydrolysis and phosphate release reactions. The key structural features of the myosin head protein responsible for the work production is thus explicitly incorporated into the two free energy profiles. Simple analytical solutions of the stationary states yield characteristic nonequilibrium distributions of forces on the nanoscale, which agree well with results of recent single-molecular experiments.

Hyung-June Woo  
University of Nevada, Reno

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