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Effects of Jamming on Nonequilibrium Transport Times through Biological and Artificial Nanochannels ANTON ZILMAN, JOHN PEARSON, GOLAN BEL, Los Alamos National Laboratory — Many biological channels perform highly selective transport without direct input of metabolic energy and without transitions from a "closed" to an "open" state during transport. Mechanisms of selectivity of such channels serve as an inspiration for creation of artificial nanomolecular sorting devices and biosensors. To elucidate the transport mechanisms, it is important to understand the transport on the single molecule level in the experimentally relevant regime when multiple particles are crowded in the channel. We analyze the effects of interparticle crowding on the nonequilibrium transport times through a finite-length channel by means of analytical theory and computer simulations and apply the results to the explanation of the single molecule fluorescence microscopy experiments in artificial and biological nano-channels.

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