

Abstract Submitted  
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**Diffusion in a soft confining environment: Dynamic effects of thermal fluctuations** BENOIT PALMIERI, SAMUEL SAFRAN, Weizmann Institute of Science — A dynamical model of a soft, thermally fluctuating two-dimensional tube is used to study the effect of thermal fluctuations of a confining environment on diffusive transport. The tube fluctuations in both space and time are driven by Brownian motion and suppressed by surface tension and the rigidity of the surrounding environment. The dynamical fluctuations modify the concentration profile boundary condition at the tube surface. They decrease the diffusive transport rate through the tube for two important cases: uniform tube fluctuations (wave vector,  $q = 0$  mode) for finite tube lengths and fluctuations of any wave vector for infinitely long tubes.

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