Library
Indian Institute of Science Education and Research Mohali

DSpace@IISERMohali (/jspui/)
/ **Publications of IISER Mohali (/jspui/handle/123456789/4)**
/ **Research Articles (/jspui/handle/123456789/9)**

Please use this identifier to cite or link to this item: `http://hdl.handle.net/123456789/3497`

Title:	Translocation through environments with time dependent mobility
Authors:	Chaudhuri, A. (/jspui/browse?type=author&value=Chaudhuri%2C+A.)
Keywords:	polymer environments dependent mobility
Issue Date:	2012
Publisher:	American Institute of Physics
Citation:	Journal of Chemical Physics, 137(20)
Abstract:	We consider single particle and polymer translocation where the frictional properties experienced from the environment are changing in time. This work is motivated by the interesting frequency responsive behaviour observed when a polymer is passing through a pore with an oscillating width. In order to explain this better we construct general diffusive and non-diffusive frequency response of the gain in translocation time for a single particle in changing environments and look at some specific variations. For two state confinement, where the particle either has constant drift velocity or is stationary, we find exact expressions for both the diffusive and non-diffusive gain. We then apply this approach to polymer translocation under constant forcing through a pore with a sinusoidally varying width. We find good agreement for small polymers at low frequency oscillation with deviations occurring at longer lengths and higher frequencies. Unlike periodic forcing of a single particle at constant mobility, constant forcing with time dependent mobility is amenable to exact solution through manipulation of the Fokker-Planck equation.
Description:	Only IISERM authors are available in the record.
URI:	https://aip.scitation.org/doi/10.1063/1.4767527 (https://aip.scitation.org/doi/10.1063/1.4767527) http://hdl.handle.net/123456789/3497 (http://hdl.handle.net/123456789/3497)
Appears in Collections:	Research Articles (/jspui/handle/123456789/9)

Files in This Item:

File	Description	Size	Format	
Need to add pdf.odt (/jspui/bitstream/123456789/3497/1/Need%20to%20add%20pdf.odt)		8.63 kB	OpenDocument Text	View/Open (/jspui/bitstream/12345...

Show full item record (/jspui/handle/123456789/3497?mode=full)

📊 (/jspui/handle/123456789/3497/statistics)