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A new approach to polymer translocation JOHAN DUBBELDAM, Delt University of Technology, VAKHTANG ROSTIASHVILI, Max Planck Institute for Polymer Research, ANDREY MILCHEV, Bulgarian Academy of Sciences, THOMAS VILGIS, Max planck Institute for Polyme Research — Polymer translocation is ubiquitous in nature. It plays a role in phenomena like virus infections and in trafficking of proteins through pores in a cell membrane. Many theoretical models have been developed to explain scaling properties of simple polymer chains through tiny nanopores. This has not resolved the controversies in this field, however. In this paper we employ novel methods to shed light on the results that were obtained using the different models that are in use today. We use, for example fractional Brownian motion to explain the scaling of the variance in the translocation length with time and find good agreement between simulation results and theoretical predictions. An extension of the theory to nanopores with more complex geometries are discussed.

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