

Abstract Submitted  
for the MAR16 Meeting of  
The American Physical Society

**Pore translocation of polymer chains with physical knots** ANTONIO SUMA, ANGELO ROSA, CRISTIAN MICHELETTI, SISSA, International School for Advanced Studies, via Bonomea 265, I-34136 Trieste, Italy — The driven translocation of knotted chains through narrow pores has important implications for single-molecule manipulation contexts. Its complex phenomenology<sup>1</sup> is, however, still largely unexplored, both as a function of knot complexity and the magnitude of the driving, translocating force. We accordingly report on a systematic theoretical and computational investigation of both aspects. In particular we consider the case of flexible chains accommodating a large repertoire of knots that are driven through pores too narrow to allow for their passage. We show that the observed rich translocation phenomenology can be rationalised in a transparent mechanical framework that can further be used for predictive purposes<sup>2</sup>.

<sup>1</sup>A. Rosa, M. Di Ventra and C. Micheletti. *Phys. Rev. Lett*, 2012, 109 , 118301

<sup>2</sup>A.Suma, A. Rosa and C. Micheletti. *Pore translocation of knotted polymer chains, submitted*, 2015

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Date submitted: 05 Nov 2015

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