Abstract Submitted
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Rare events in viscoelastic escape dynamics and subdiffusive transport[1] IGOR GOYCHUK, University of Augsburg — Anomalously slow relaxation, escape and transport processes become increasingly important in many research domains. This talk is focused on a profound question: Does anomalously slow subdiffusive dynamics imply rare events with a divergent mean time separating such events in multistable potentials? The answer depends on the underlying physical mechanism. It is shown that the subdiffusive dynamics originated due to the medium's viscoelasticity and described by a power law memory kernel within the non-Markovian generalized Langevin equation (GLE) approach does not imply such anomalously rare events [1]. Based on a Markovian multidimensional embedding of the GLE dynamics it is shown that the kinetics of subdiffusive Kramers escape is asymptotically stretched exponential for intermediate barriers. It is characterized by a finite mean escape time, and all the higher moments are also finite. Moreover, it approaches normal exponential kinetics for very high barriers which coexists with anomalously slow subdiffusion and transport in washboard potentials [1]. Rare escape events for such subdiffusive dynamics are not presenting the transport limiting step.

[1] I. Goychuk, Phys. Rev. E 80, 046125 (2009); Adv. Chem. Phys. 150 (2012, in press).

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