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Peer Review

Review of: "Numerical Prediction of the Steady-State Distribution Under Stochastic Resetting from Measurements"

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This article describes a numerical method, suitable for experimental applications, for determining the steady state of systems subject to stochastic resetting. In particular, the method allows one to obtain the steady state when the resetting time distribution and the propagator in the absence of resetting are not explicitly known, but are determined by measurements.

The method is then validated by applying it to experiments on different systems: a single freely diffusing colloidal particle, a system of six colloidal particles with optical traps, and a system with strong environmental memory where an active particle interacts with obstacles. In all these cases, the method proves effective in determining the steady state with good approximation.

Indeed, one of the strengths of the method is its generality. However, it is important to remark that the existence of a stationary state is not always guaranteed. For example, if the resetting time distribution decays with a slow power law, there is no stationary distribution, see Nagar and Gupta, Phys. Rev. E 93, 060102(R) (2016) and also Barkai et al., Phys. Rev. E 108, 064102 (2023). In relation to this point, I think the authors should explain what they mean by calling the constant r in Eq. (1) the "mean resetting rate". How do they define it? My understanding is that such a constant is the inverse of the mean resetting time (the average time between two resets), which is another quantity that can be easily determined by measurements when the reset time distribution is unknown. This would make it clear that a steady state can only be achieved if the mean resetting time is finite. Finally, let me point out a typo: in the introduction, the term "a priori" is misspelled as "a priory".

These minor observations aside, the article represents an interesting advance in research related to resetting, especially relevant for experimental applications.

Declarations

Potential competing interests: No potential competing interests to declare.

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