



Contribution ID: 9

Type: **Invited talk**

Linear response and fluctuation-dissipation relations for stochastic processes under resetting

Saturday, September 17, 2022 3:00 PM (45 minutes)

We discuss a general situation of a response of a random process under stochastic resetting to an external force. The displacement process is considered to be a Markov one, and it starts anew at resetting events which follow a renewal process (complete resetting). When assuming that the displacement process shows linear response to a weak external force, we ask what kind of the response does the reset process show, and under what conditions usual fluctuation-dissipation relations (FDRs) or the generalized Einstein's relations (GERs) apply for this process. After discussing the general approach we turn to a specific example of a Brownian motion under resetting with arbitrary waiting time distribution between the resetting events for which many properties can be explicitly calculated. We show that if the distribution of waiting times of the resetting process possesses the second moment, the usual FDR applies for the response function of the coordinate, and if the second moment diverges but the first one stays finite, the static susceptibility diverges, but the GER still applies. In any of these situations, the fluctuation dissipation relations define the effective temperature of the system which is twice as high as the temperature of the medium in which the Brownian motion takes place.

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