Fluctuation dissipation phenomenology away from equilibrium

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The fluctuation dissipation phenomenology, in essence, is a relation $A = D/T$ that connects the rate of energy absorption to its diffusive spreading, where T is the canonical temperature. We explain how this relation can be generalized in circumstances away from equilibrium. In [1] we propose a minimal Fokker-Planck theory for the thermalization of mesoscopic subsystems, without having any baths. In [2,3] the flow of energy from a work agent to a bath is mediated by a "sparse" system whose non-equilibrium steady state has "glassy" features. In both cases we explain how to formulate the fluctuation dissipation relation, and what "temperature" to use.

[1] I. Tikhonenkov, A. Vardi, J.R. Anglin, D. Cohen, Phys. Rev. Lett. 110, 050401 (2013)

[2] D. Hurowitz, D. Cohen, Europhysics Letters 93, 60002 (2011)

[3] D. Hurowitz, S. Rahav, D. Cohen, Europhysics Letters 98, 20002 (2012)