Abstract Submitted
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Fokker-Planck Dynamics in the Energy Domain[1] GCINA MAVIMBELA, Dept of Physics and Astronomy, Ohio University, HORACIO E. CASTILLO, Dept of Physics and Asatronomy, Ohio University, CLAUDIO CHAMON, Physics Dept, Boston University — We derive a Fokker-Planck Equation (FPE) in the energy domain for a system in an infinite heat bath by coarse-graining its microscopic Master Equation. The resulting FPE carries information on the dynamics through a function $\lambda(E)$, which is a sum over all possible transitions given a state of energy E. We investigate the effects of changing the assumptions about the transition rates without changing the Hamiltonian of the model. By determining the eigenvalues of the equivalent Schrodinger Equation (SE), we get the relaxation spectrum of the FPE. We find that in the thermodynamic limit the equivalent SE approaches the classical limit, and we use the WKB approximation to solve it. We illustrate the use of the method by applying it to several examples, including a system of harmonic oscillators, and a paramagnet in an external magnetic field.

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