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Title: Wang Landau sampling method as a Markov chain

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Wang Landau method (F. Wang and D.P. Landau, Phys. Rev. Lett. {\bf 86} (2001) 2050; Phys. Rev. E {\bf 64} (2001) 056101) is very effective tool for the direct calculation of the partition function for many statistical models. It is especially superior comparing with other known methods for the investigation of system with first order phase transition, and for the system with the complex ground state. Process of the numerical estimation of the partition function may be viewed as a random walk in the energy space of the model in investigation - it is the random probing in the configuration space with transitions characterized by the energy of configuration. Investigation of the corresponding transition matrix leads to proposition that Wang Landau method may be viewed as irreducible and aperiodic Markov chain. We suggest existence of the steady state, and propose realization of the Wang Landau algorithm which drives system from any initial state to the steady state. The steady state gives coefficients in the high-temperature expansion of partition function with any desired accuracy limited by the computation time and memory requirements.