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**Stewart N. Ethier\*** ([ethier@math.utah.edu](mailto:ethier@math.utah.edu)) and **Jiyeon Lee**. *The flashing Brownian ratchet and Parrondo's paradox*. Preliminary report.

A Brownian ratchet is a one-dimensional diffusion process that drifts toward a minimum of a periodic asymmetric sawtooth potential. A flashing Brownian ratchet is a process that alternates between a Brownian ratchet and a Brownian motion, producing directed motion. These processes have been studied by physicists and biologists for nearly 25 years. The flashing Brownian ratchet is the process that motivated Parrondo's paradox, in which two fair games of chance, when alternated, produce a winning game. Parrondo's games are relatively simple, being discrete in time and space. The flashing Brownian ratchet is more complicated. We show how one can study the latter process numerically using Markov chains. (Received September 18, 2017)