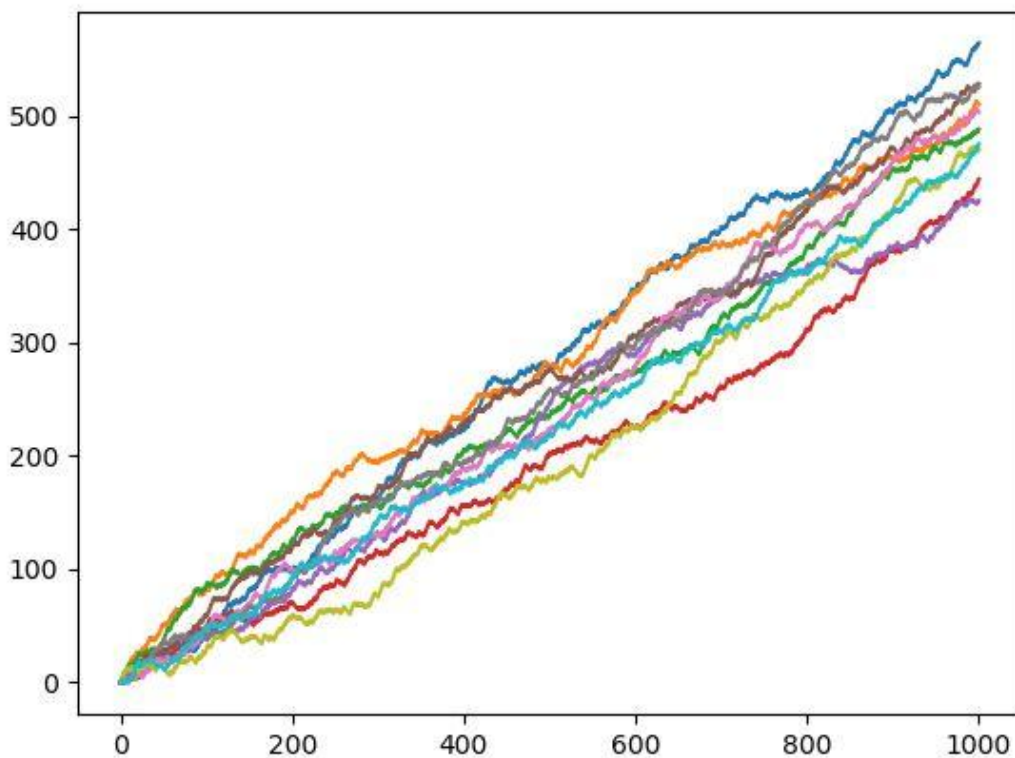


Brownian walks, survival, first passage time, and control!

In this project you will study the statistics of a 1d Brownian particle evolving in the presence of an external force and of an absorbing boundary. You will compare the distribution of the position of the walker at given time in absence and in presence of the absorbing wall. How easy/difficult is it to obtain statistics on the position of the non-absorbed walkers? To answer this question you will study the evolution of the survival probability and/or of the first passage time probability. In order to get more statistics on non-absorbed walk (i.e. large deviation statistics), you will modify the external force to add a control force that prevents walkers from being absorbed. How easy is it now to obtain statistics on non-absorbed walkers? How does the landscape in which the particle is propagating look like now? If time permits, you will play with different choices of control of the Brownian walker (e.g. simulate Brownian bridges), and/or extend the simulation to Brownian particles evolving in the 2d-plane.



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