Asynchronous lecture 2

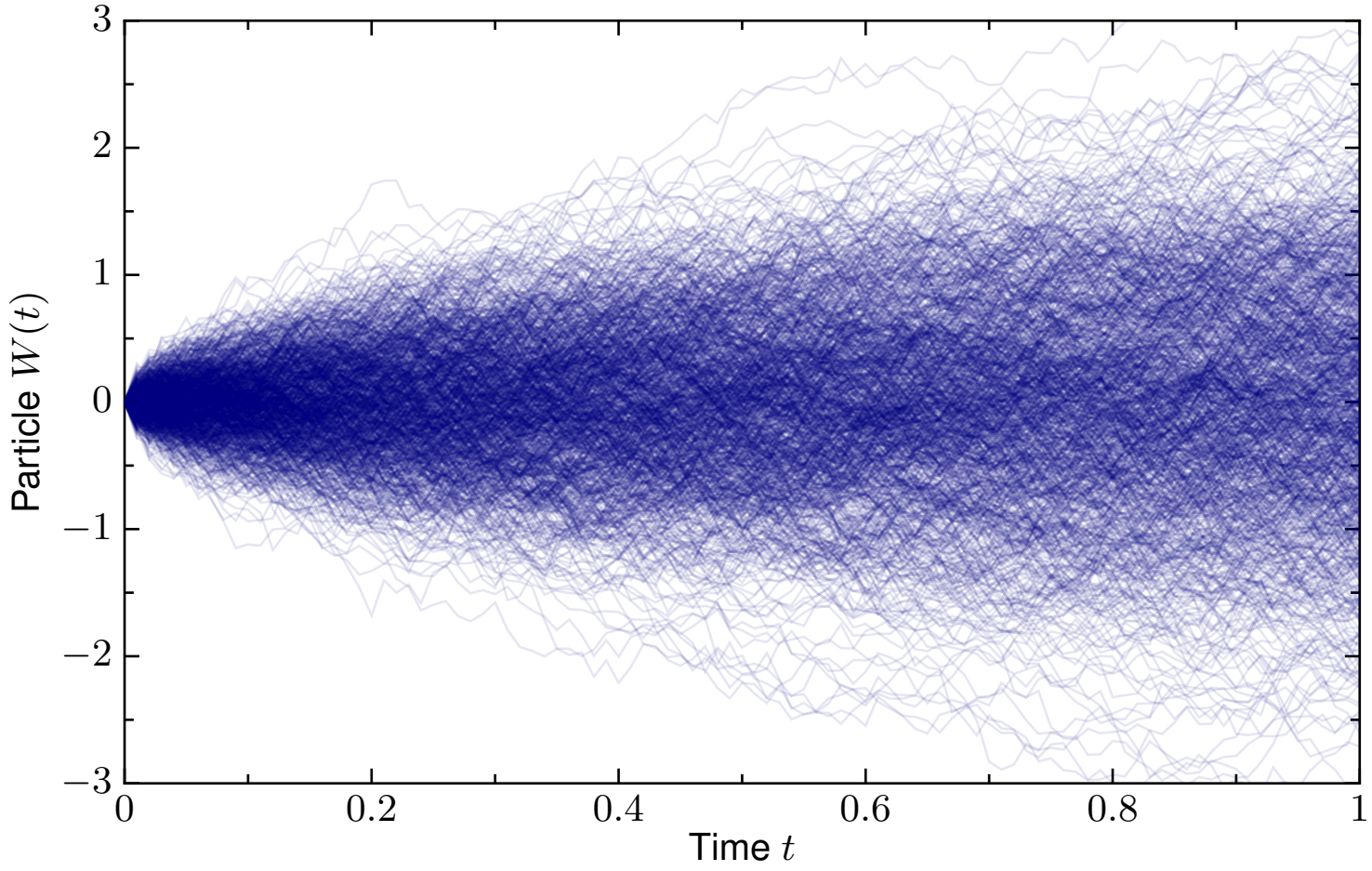
- Diffusion/Heat equation (finite domain)

Diffusion Equation

$$\frac{\partial u}{\partial t} = D\frac{\partial^2 u}{\partial x^2}$$

- Probabilistic description of Brownian motion
- Special case of the Fokker-Planck equation
  - Converts a general stochastic differential equation into a PDE on probabilities
- Many uses in physics, finance, time-series analysis, . . .

Brownian motion



Solving with finite boundaries

Consider the diffusion equation with finite boundaries and initial data