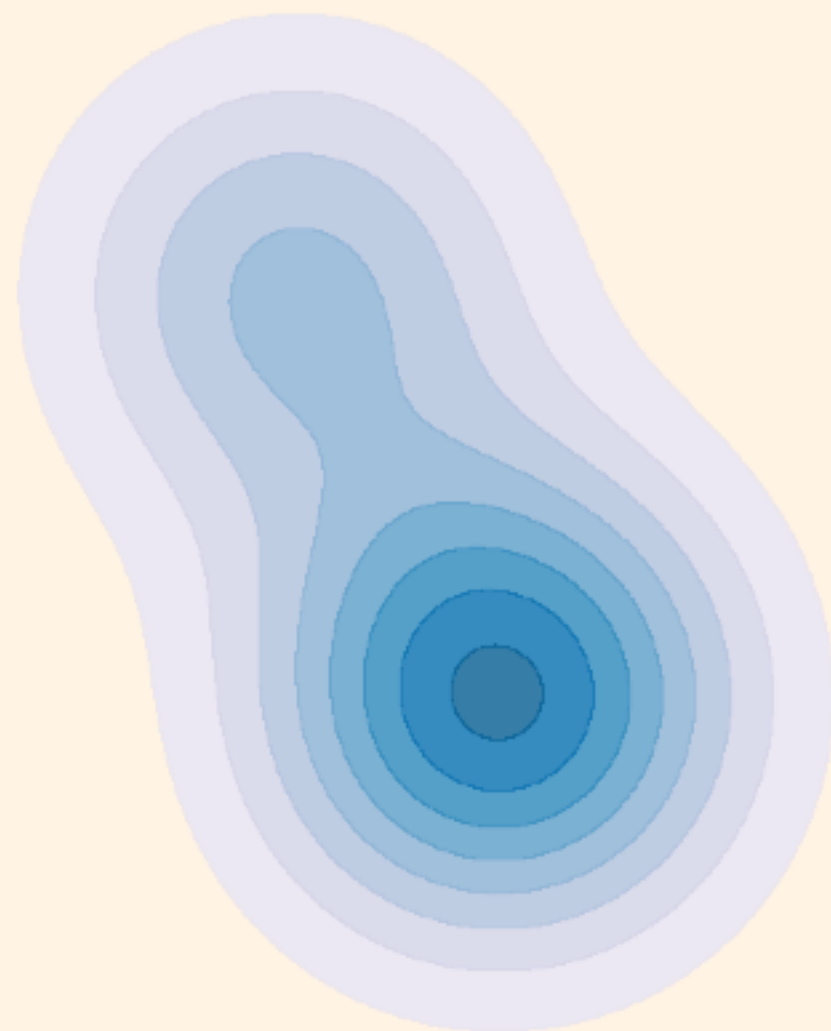
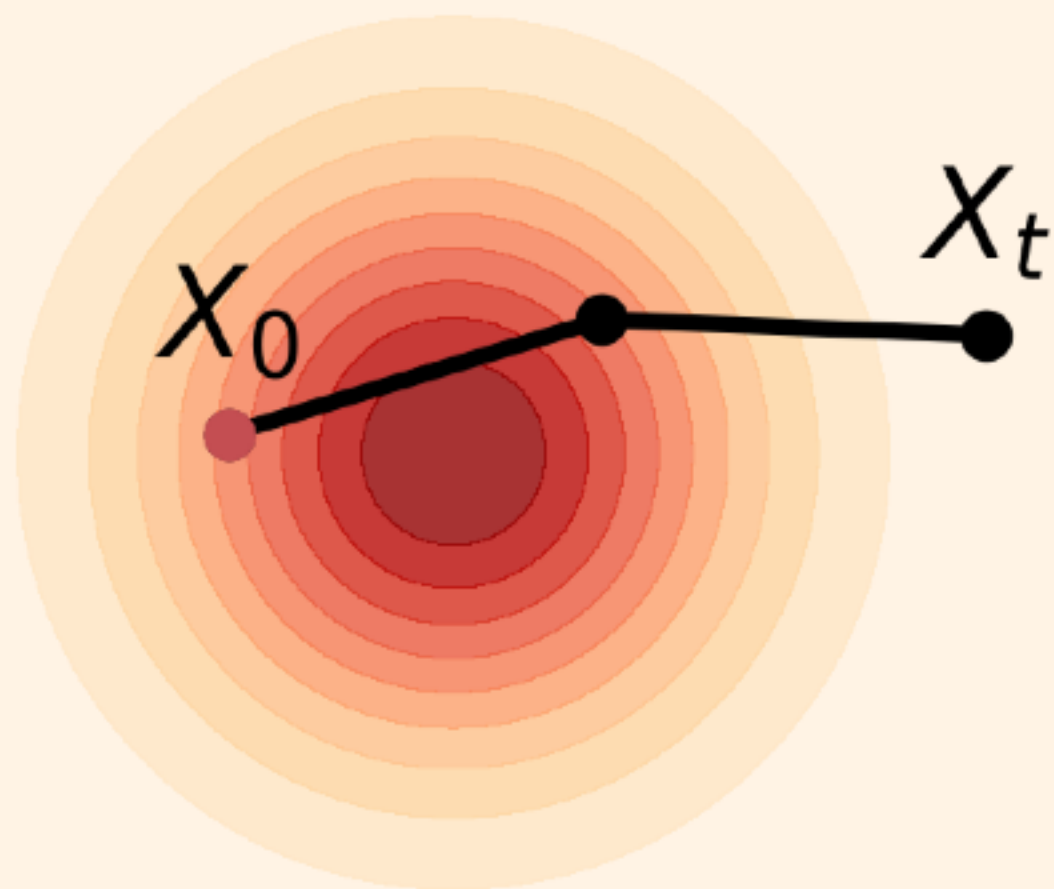
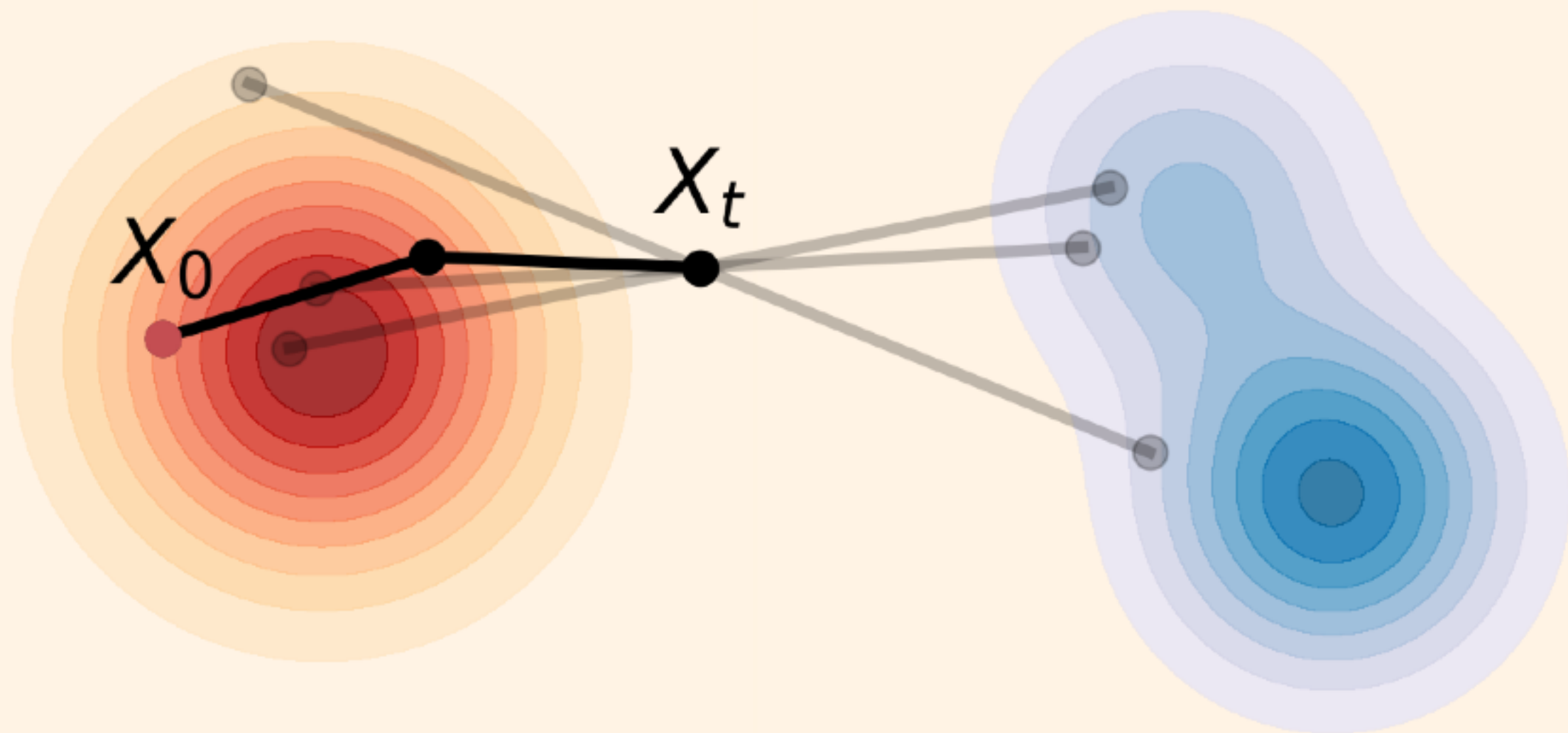
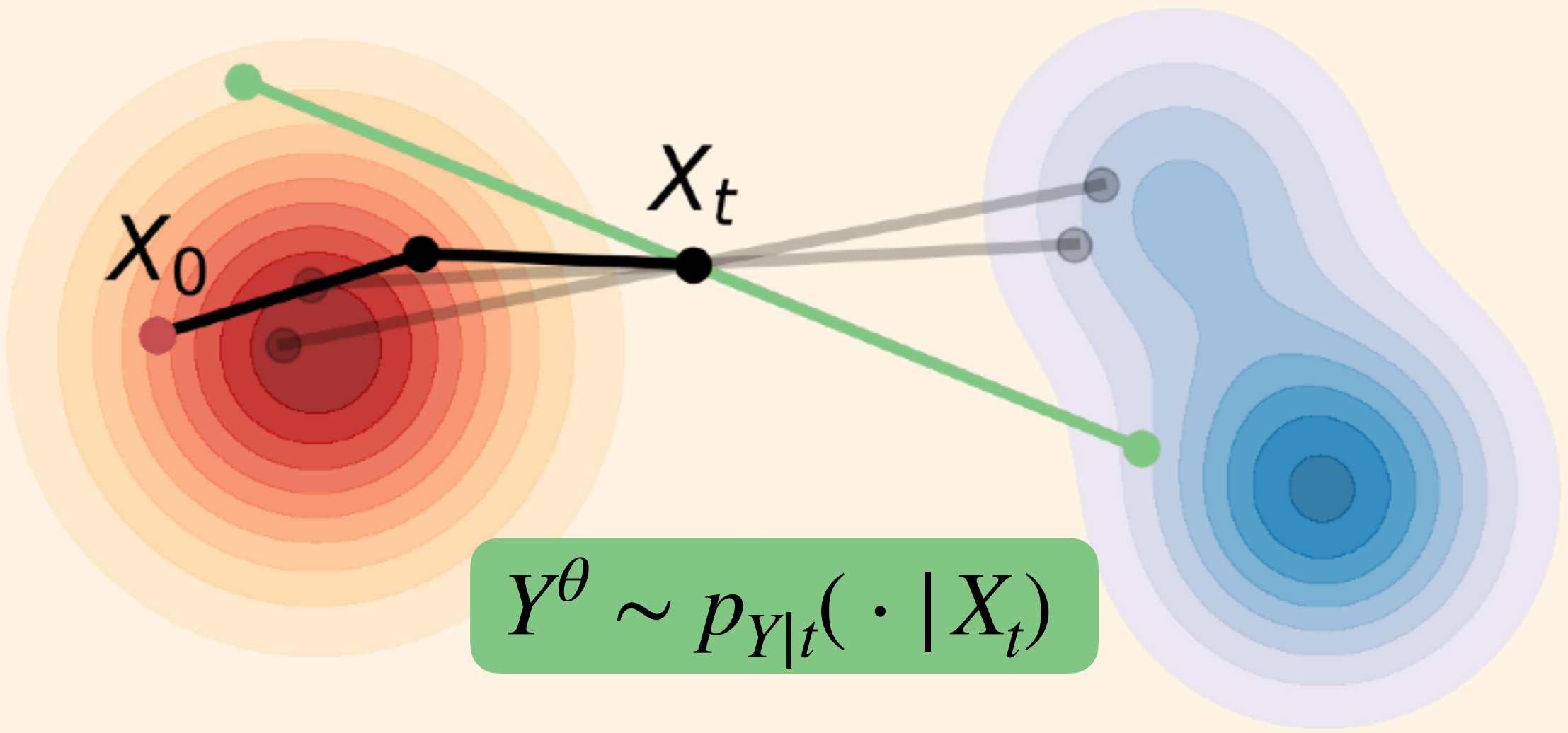


DTM vs. FEM



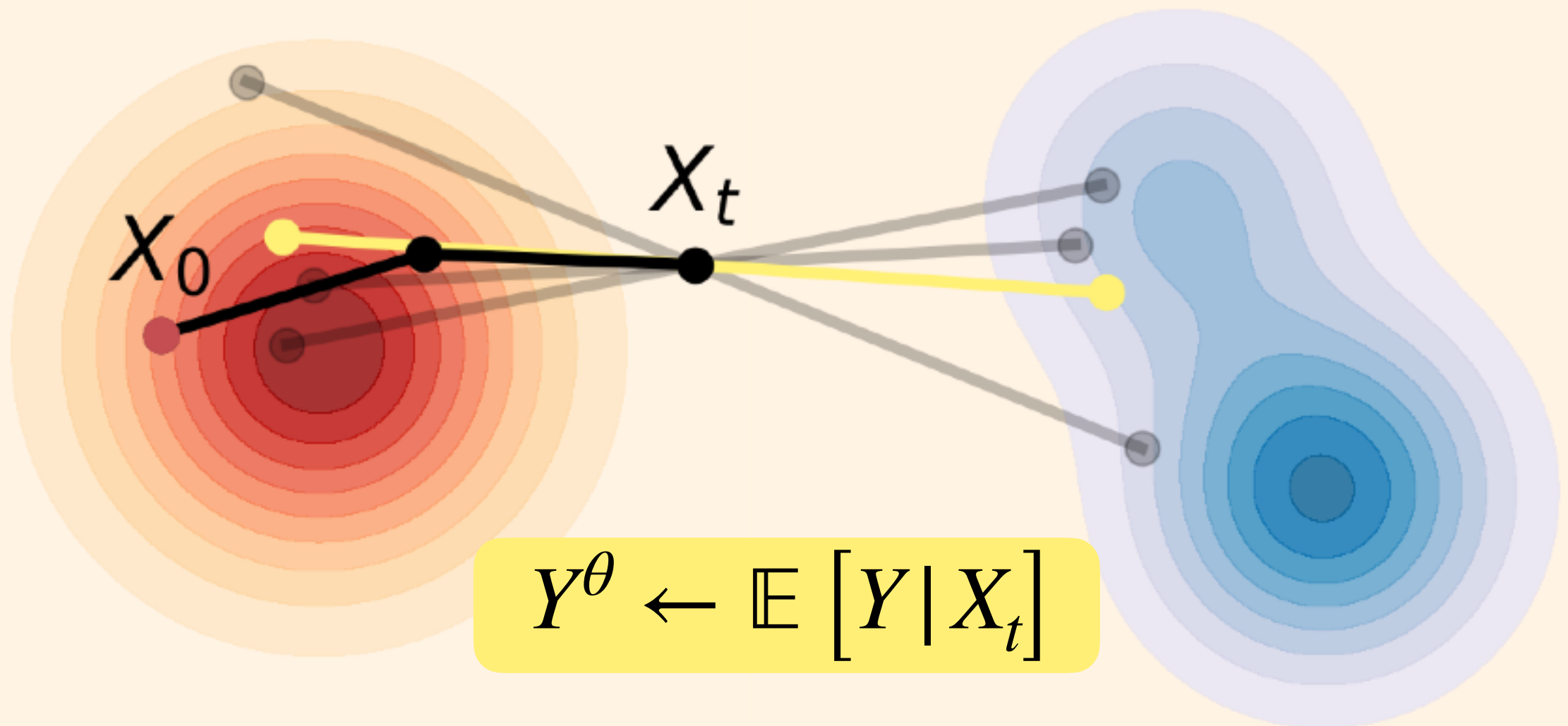




The diagram illustrates a Markov Chain Monte Carlo (MCMC) process. It features two contour plots: a red one on the left and a blue one on the right. A black line represents a sequence of states, starting at X_0 (a red dot) and moving through several black dots to a final black dot labeled X_t . From X_t , two green lines branch out to green dots in the blue contour plot, representing a new proposal distribution. Two grey lines also originate from X_t and point to grey dots within the blue contour plot, likely representing the acceptance or rejection of proposals. A green rounded rectangle at the bottom contains the mathematical expression for the proposal distribution.

$$Y^\theta \sim p_{Y|t}(\cdot | X_t)$$

FM



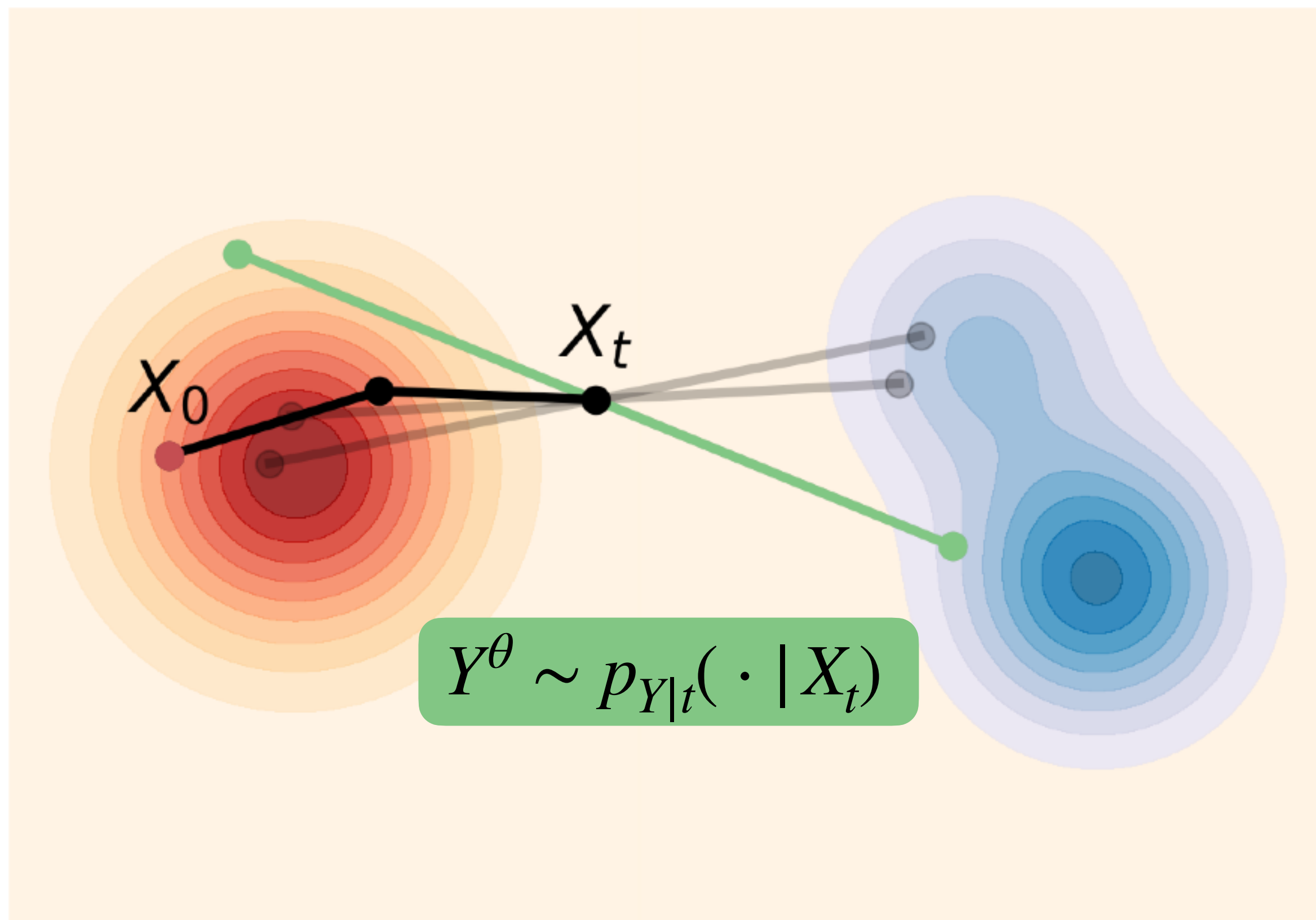
D

T

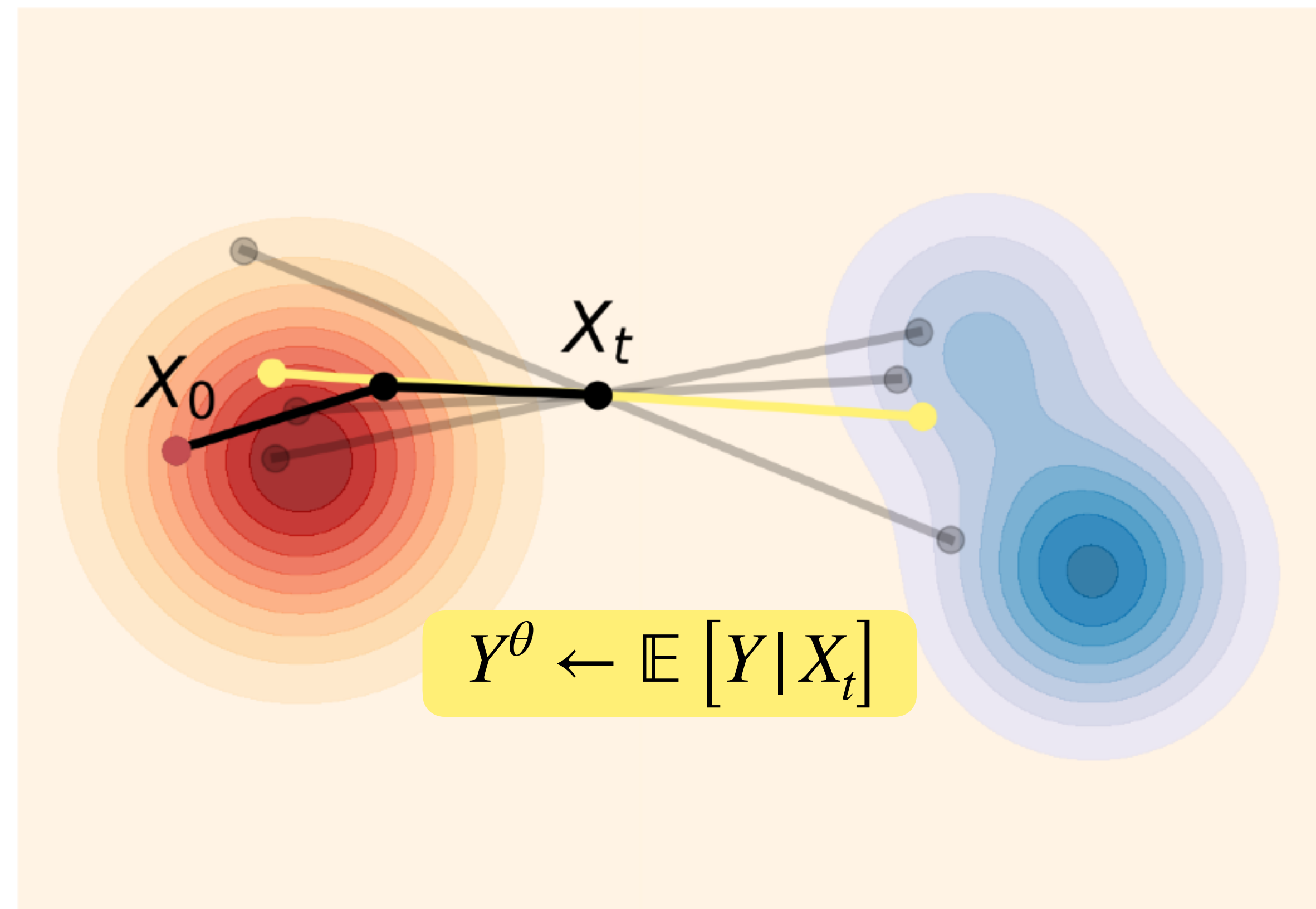
M

DTM vs. FM

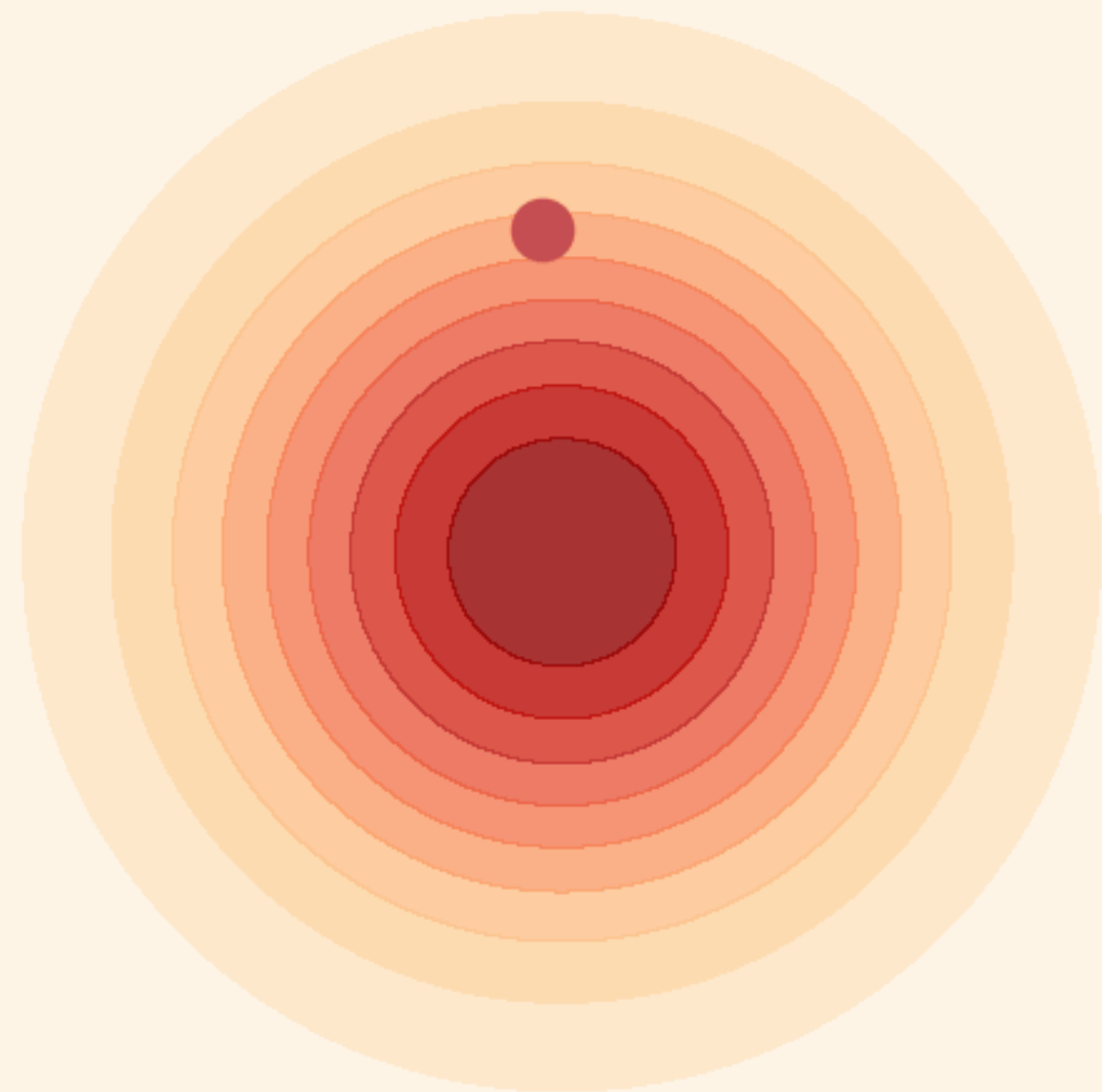
DTM



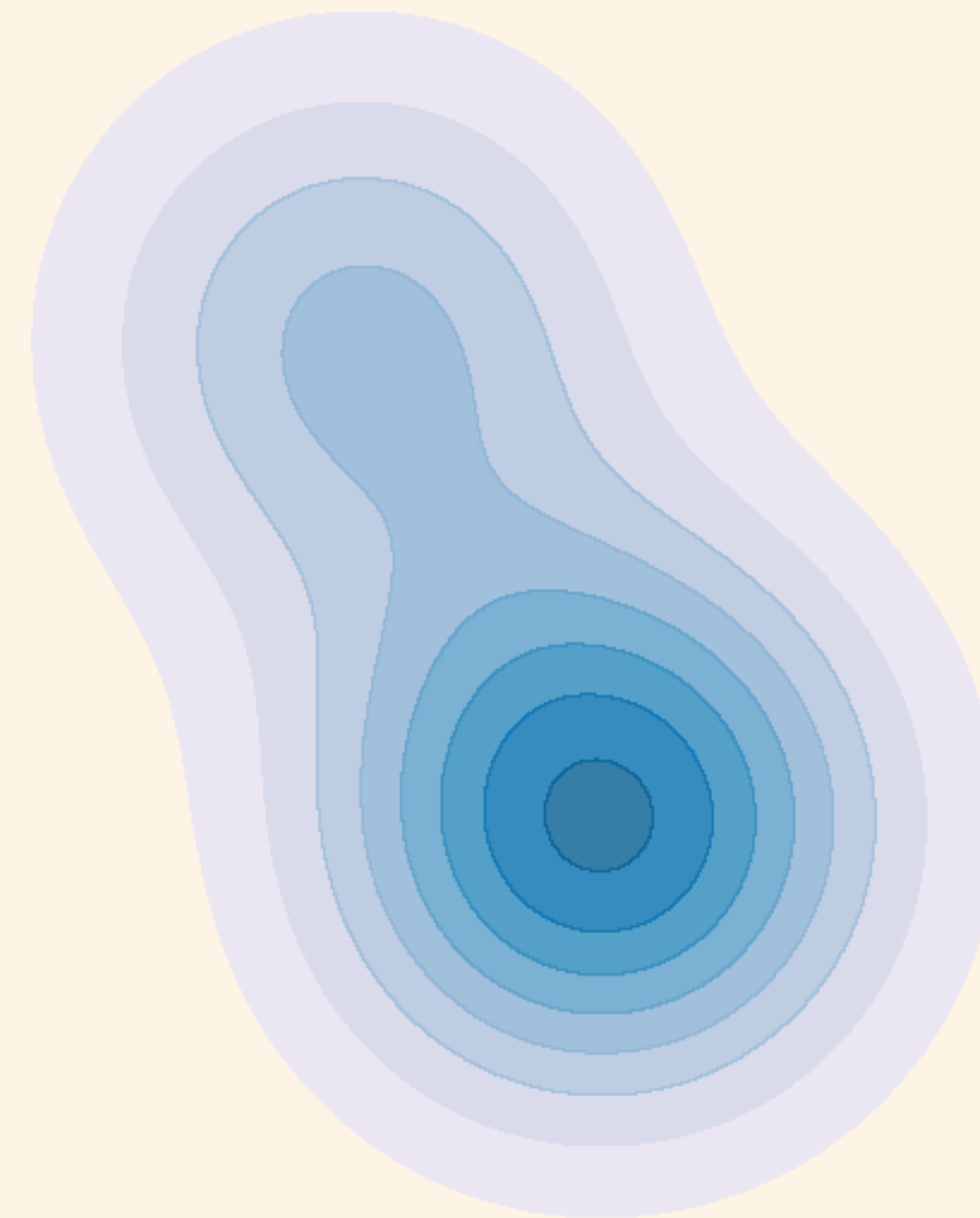
FM



DTM vs. FM



— DTM: 2-steps
— FM



Theorem 1: (informal) As the number of steps increases, $T \rightarrow \infty$, DTM converges to Euler step FM. Given a state $X_t = x_t$,

$$X_{t+k} \approx x_t + \frac{k}{T} \mathbb{E} [X_T - X_0 | X_t = x_t], \quad \text{as } k/T \rightarrow 0, k \rightarrow \infty.$$