Supervising Process

Example:

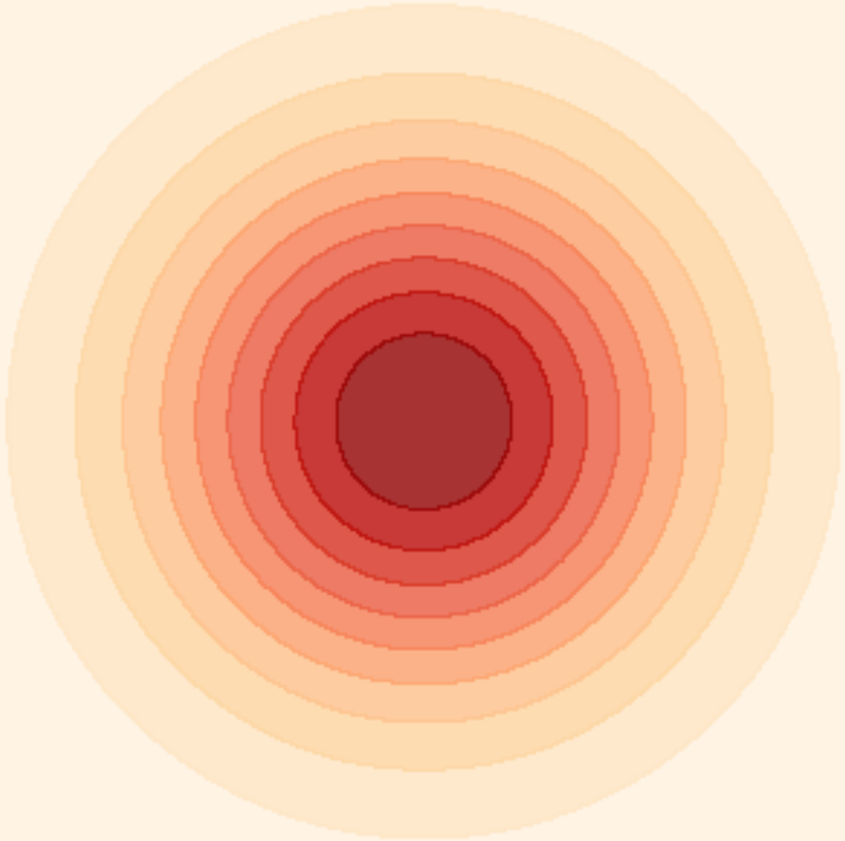
Linear process

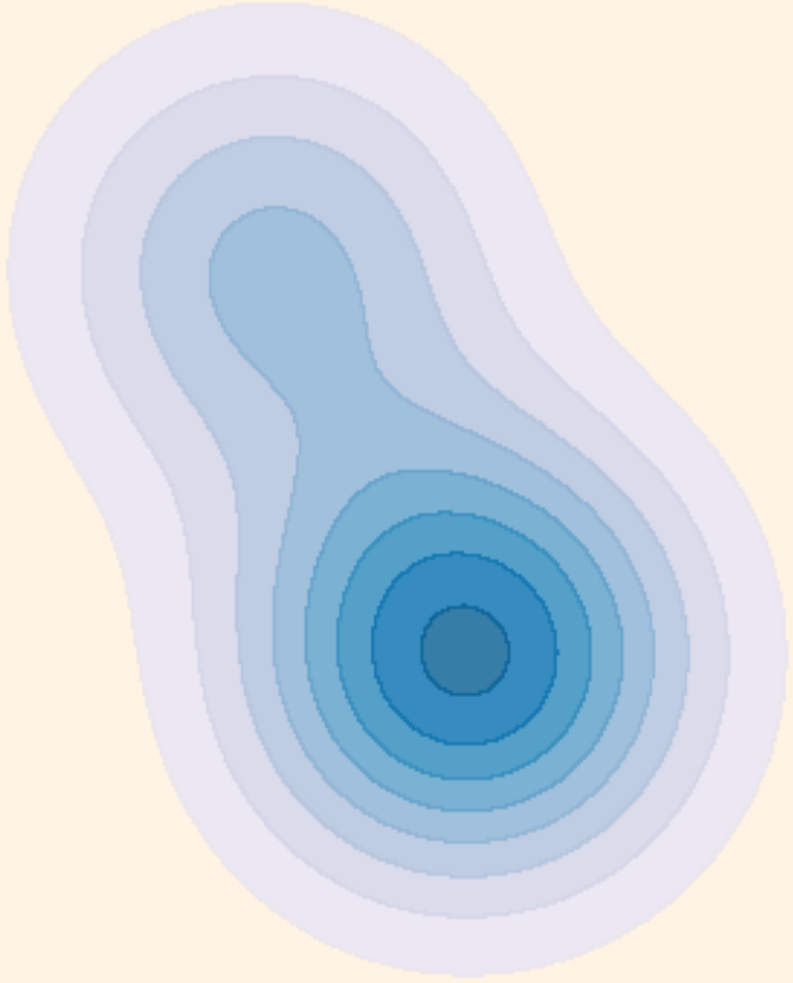
$$X_t = \left(1 - \frac{t}{T}\right) X_0 + \frac{t}{T} X_T \,,$$

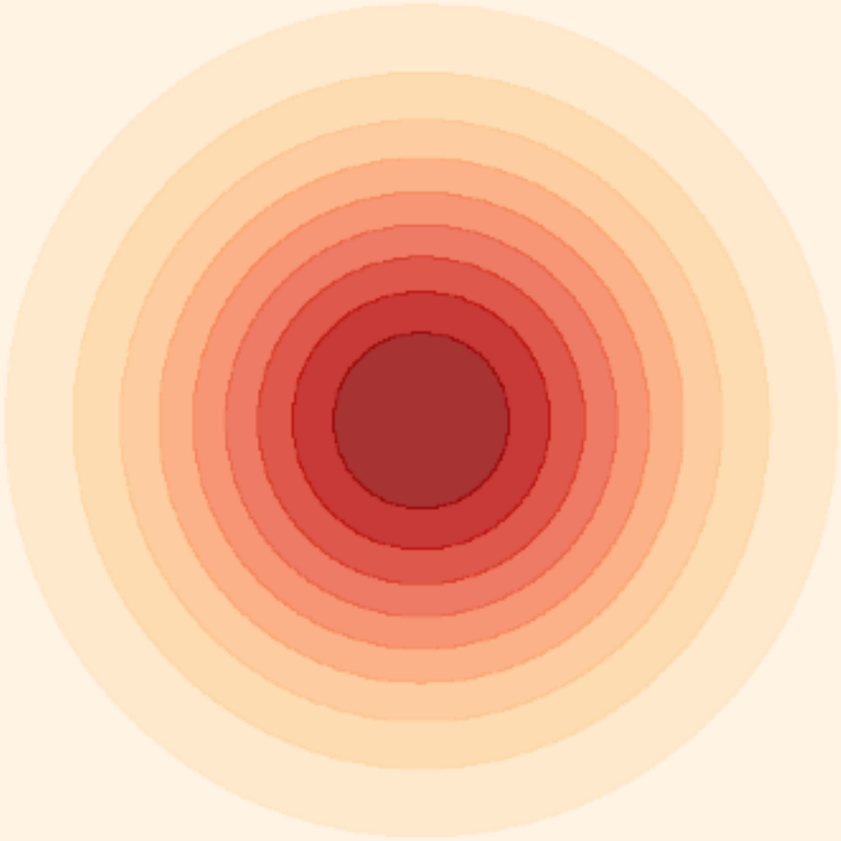
Where $X_0 \sim \mathcal{N}(0, I)$ and $X_T \sim p_T$.

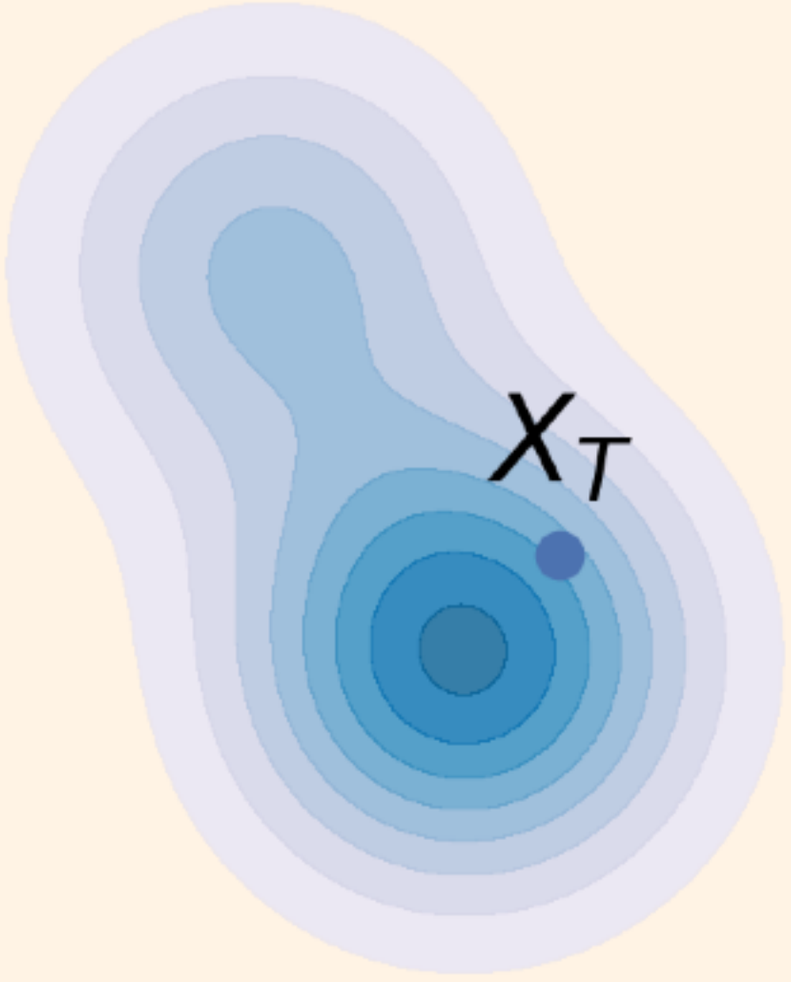
Requirements:

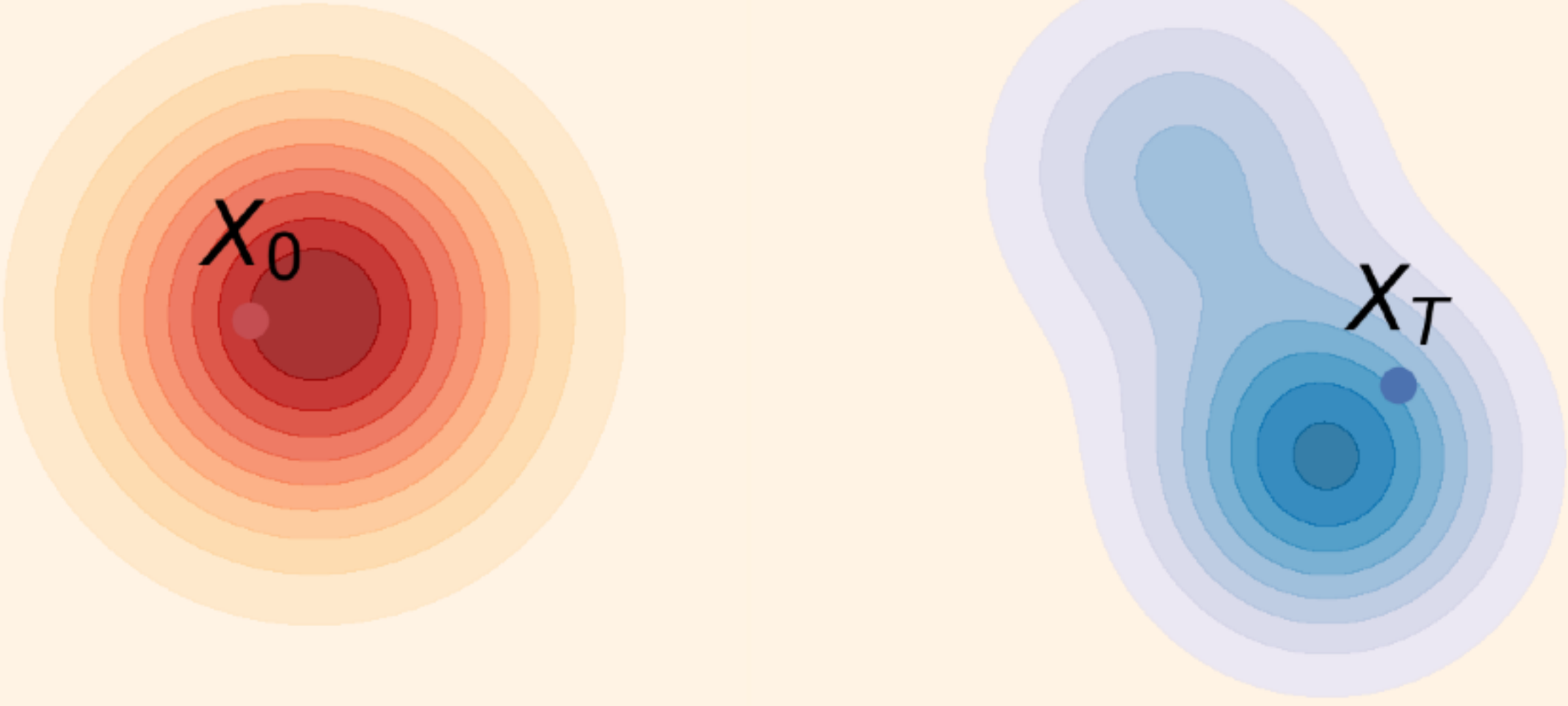
X_t interpolate source (noise) and target (data).

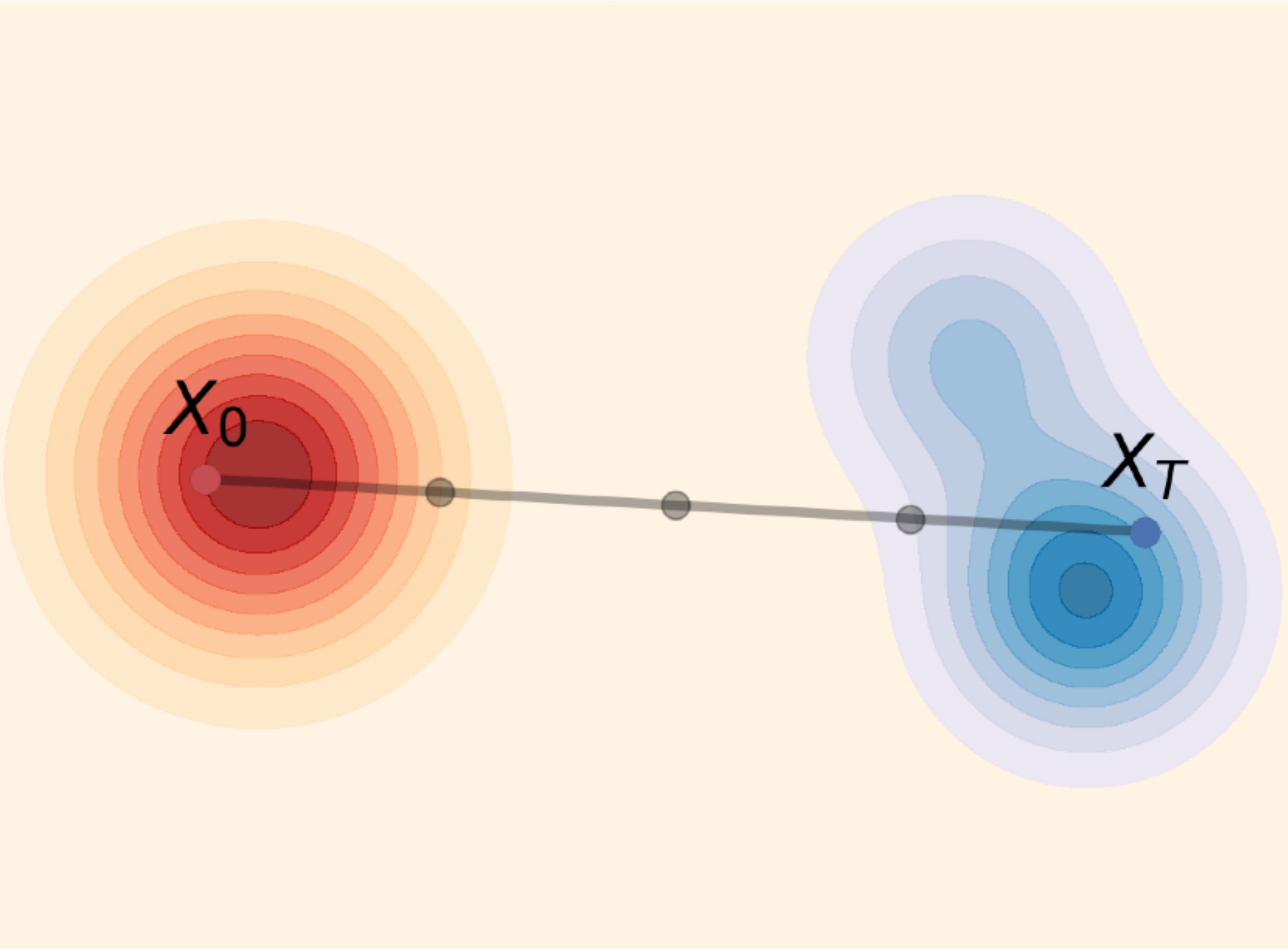


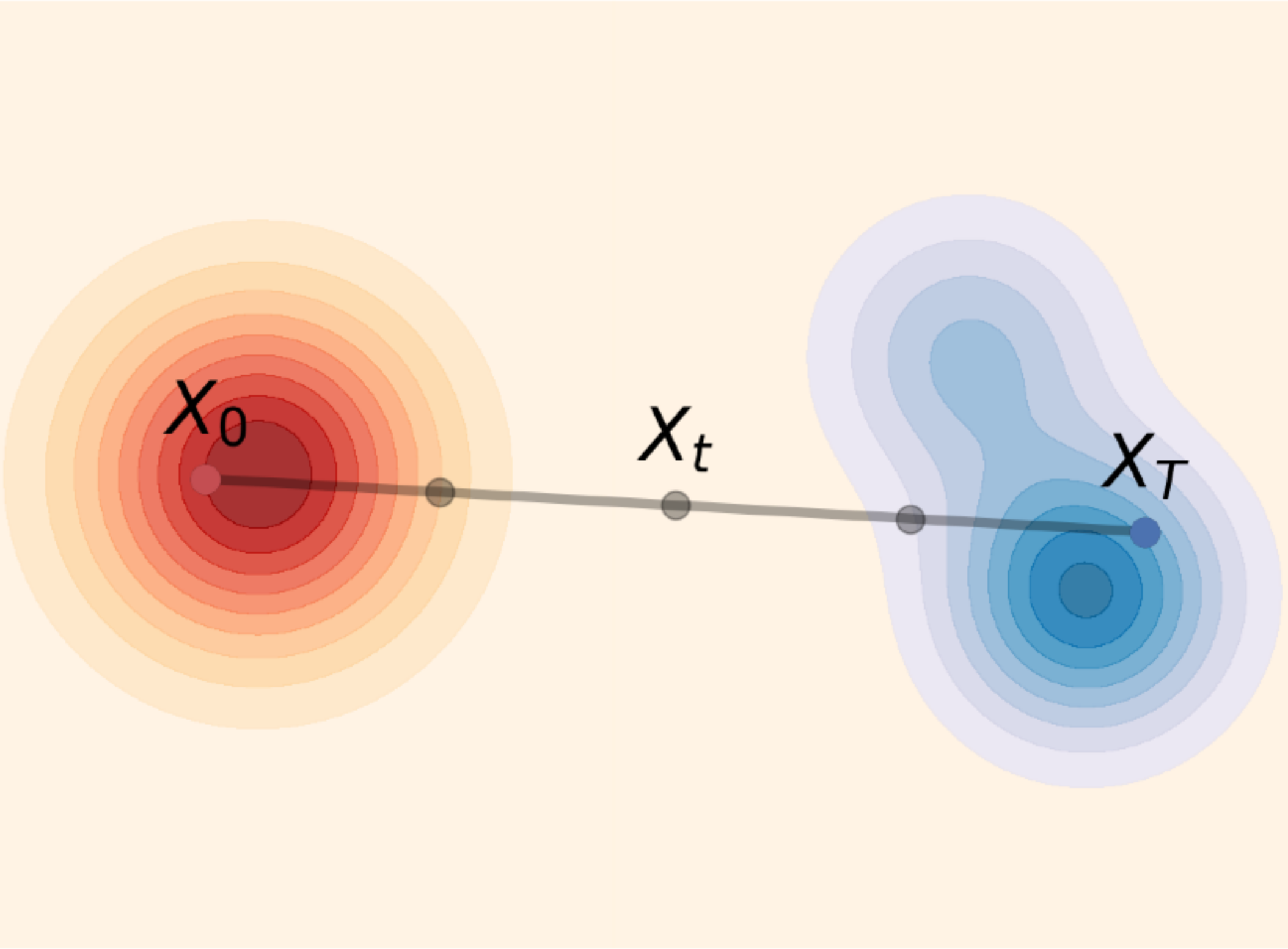


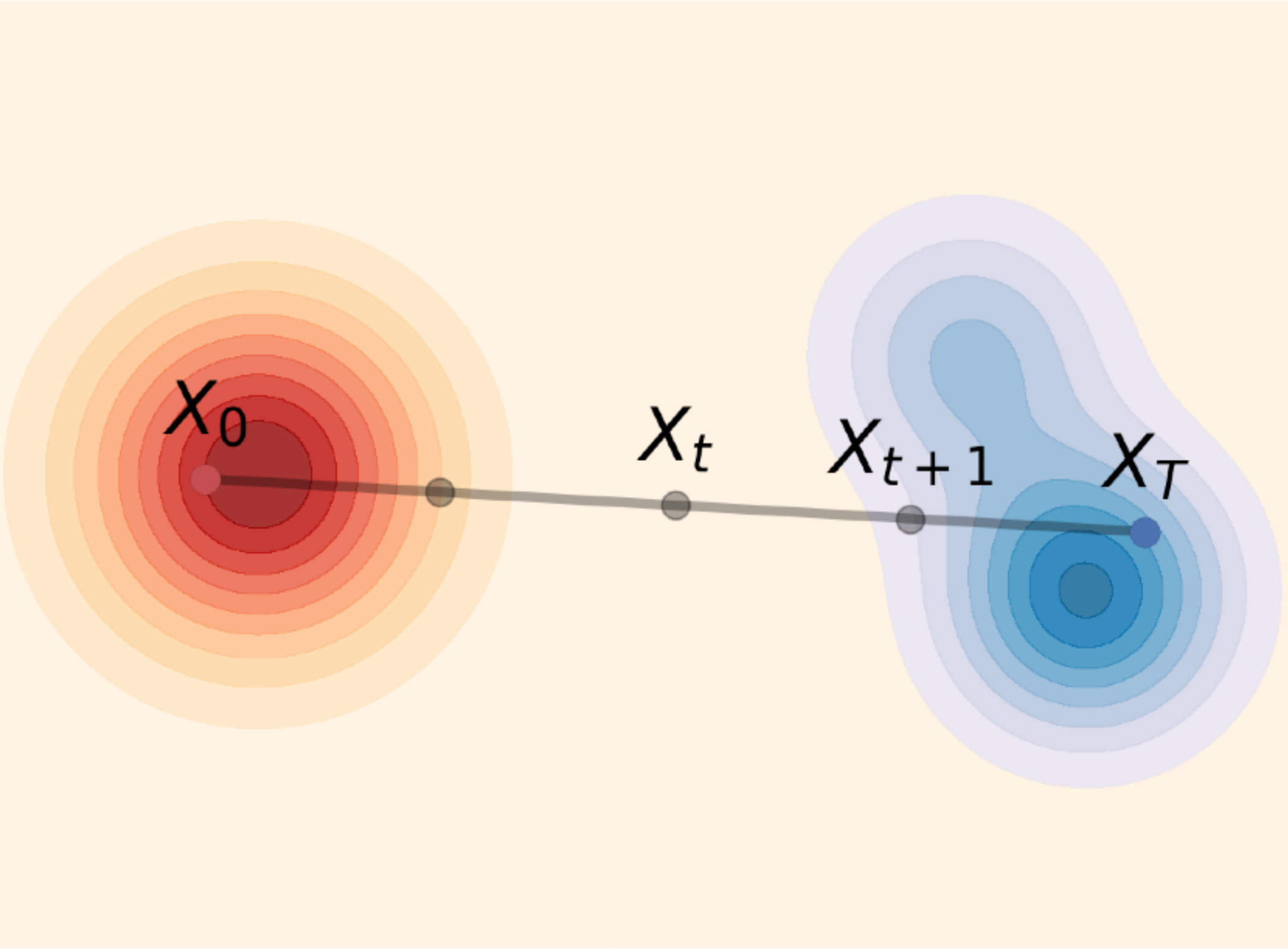


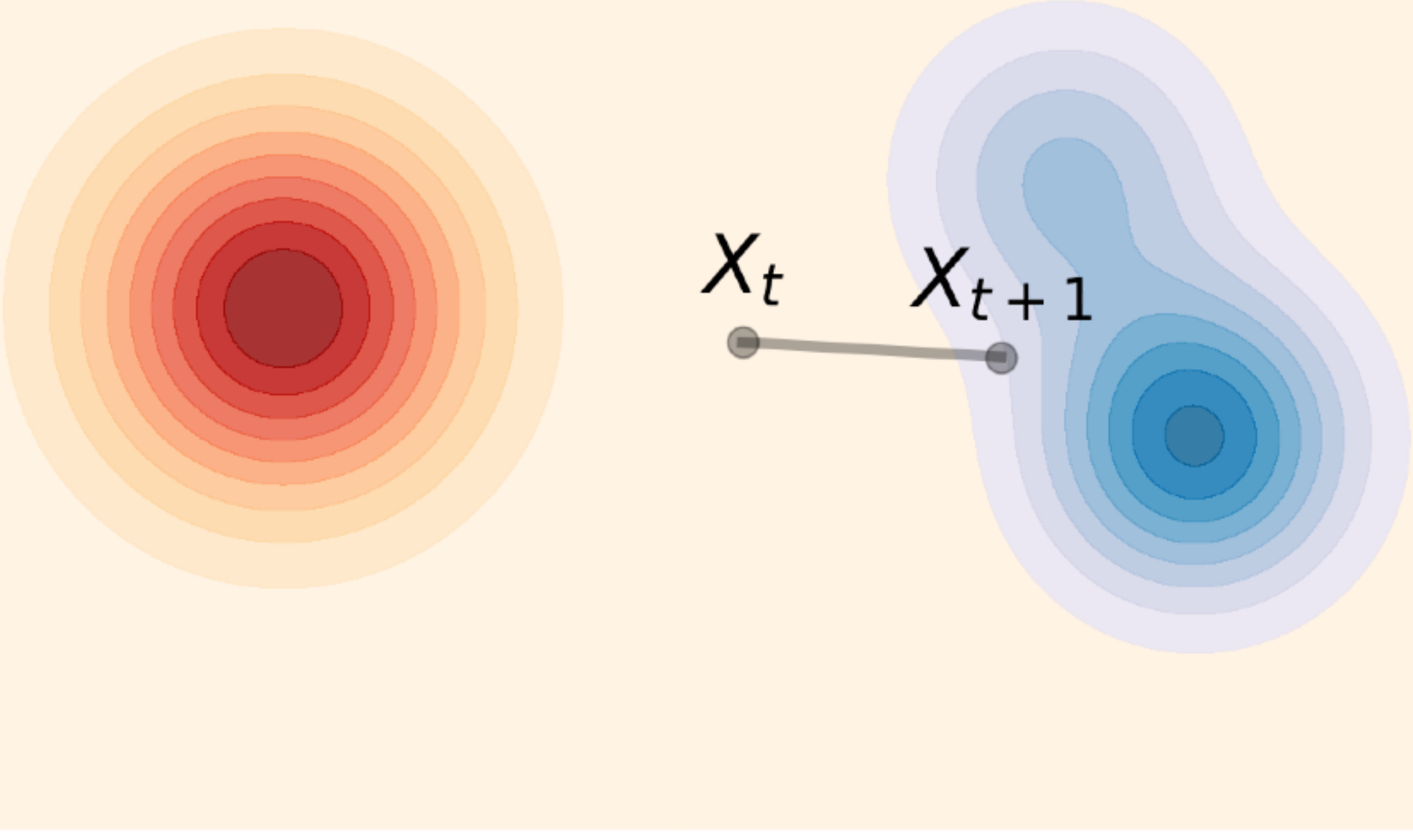

x_T

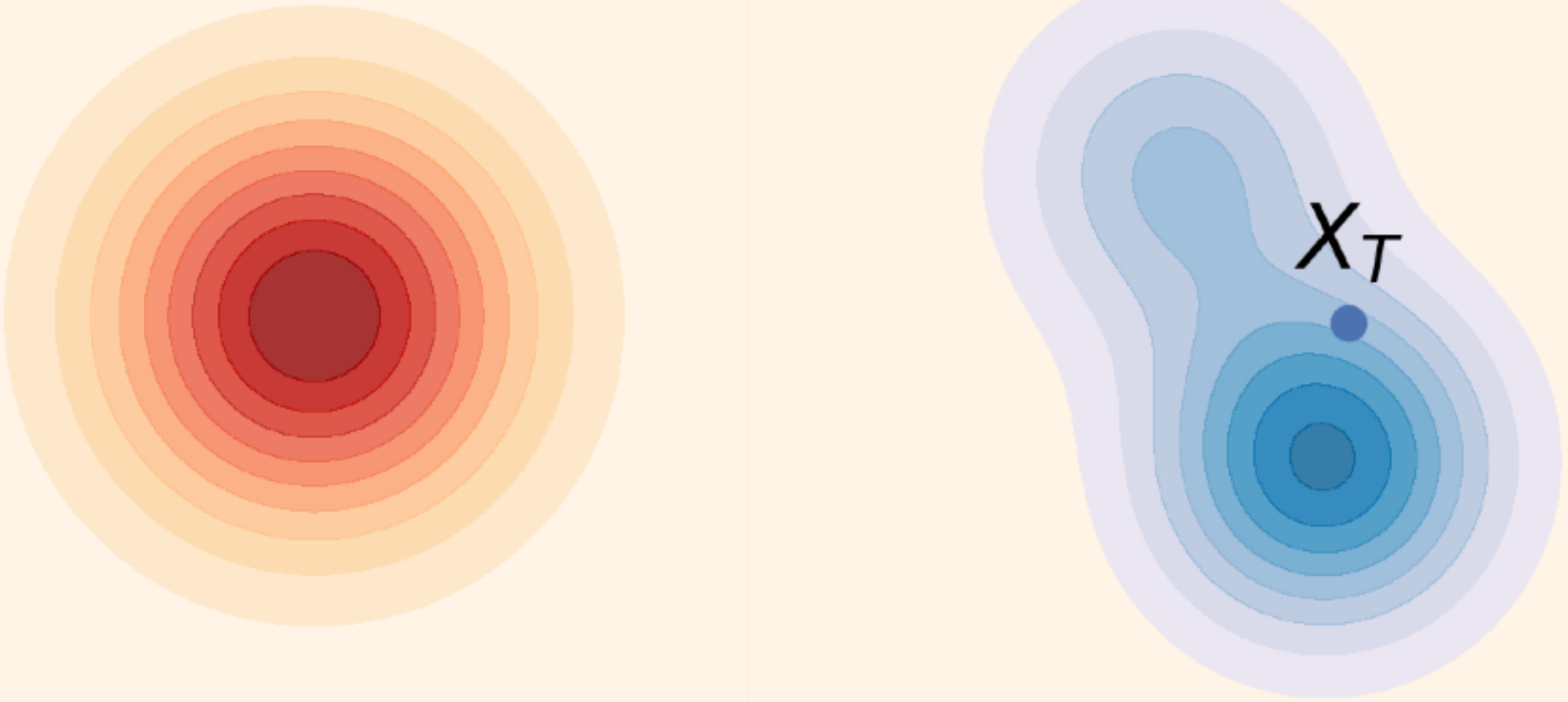

x_0
x_T

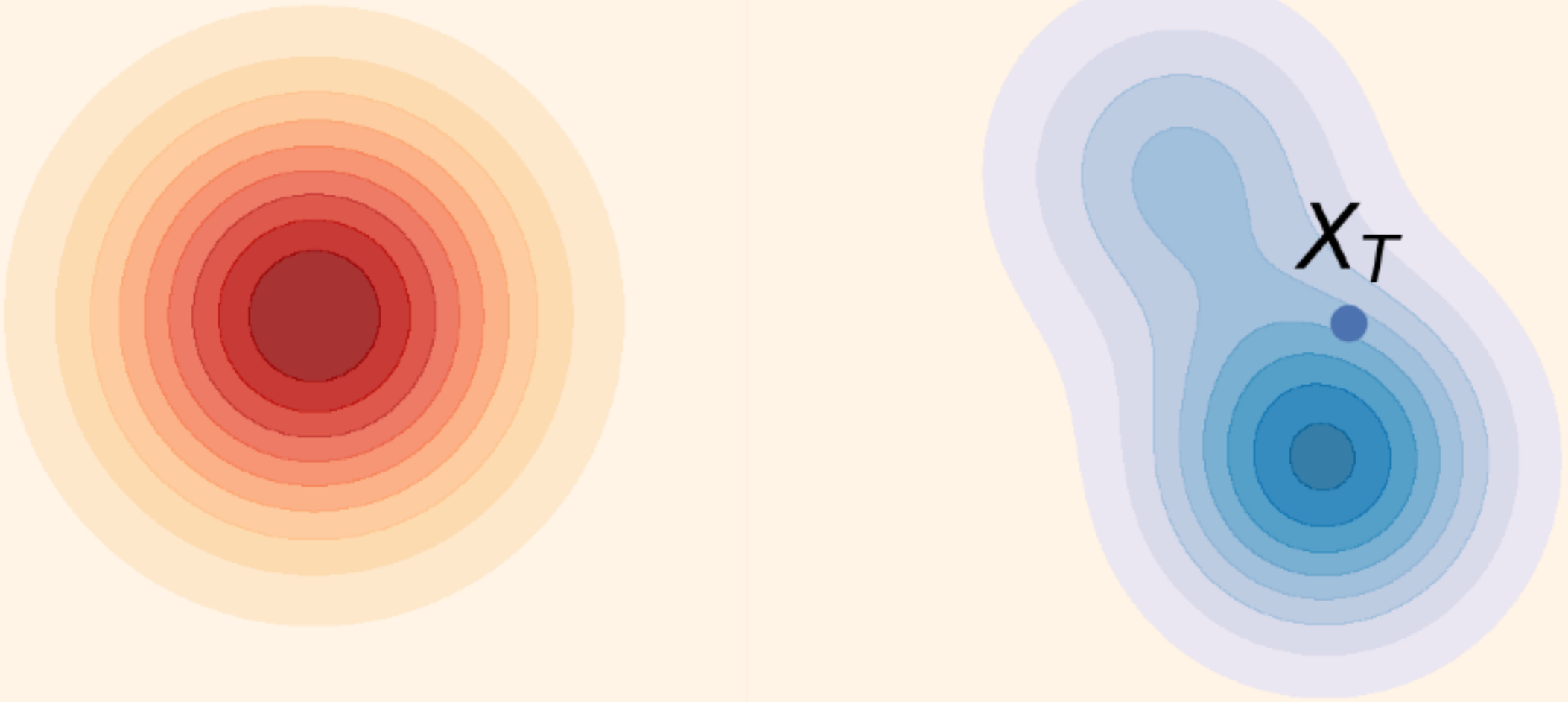

X_0
X_T

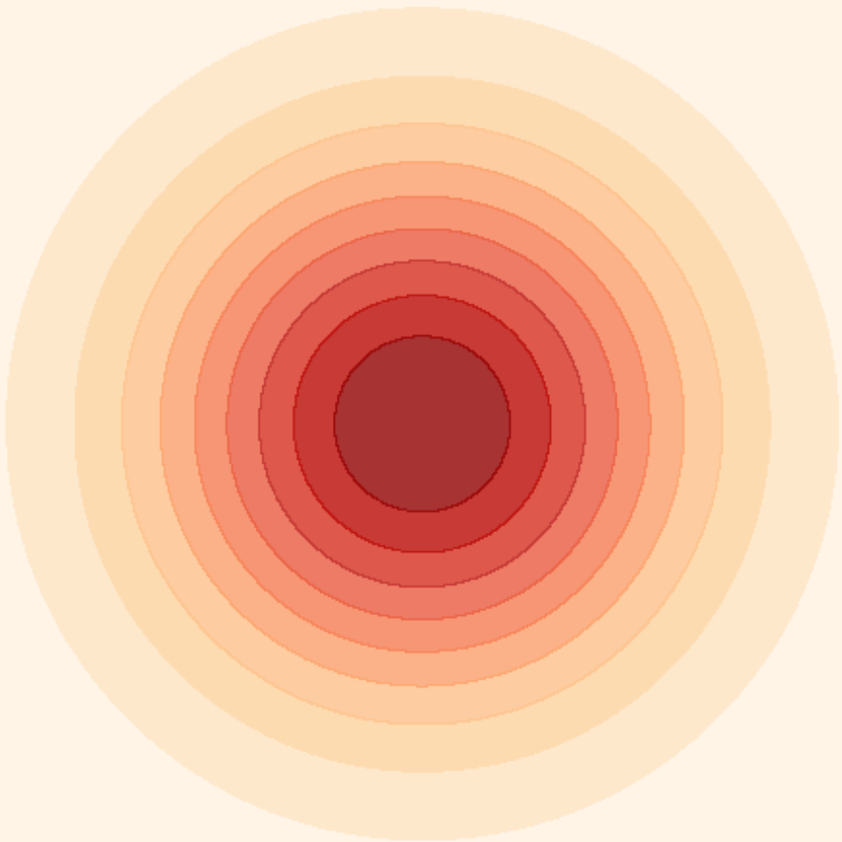

x_0
x_t
x_T

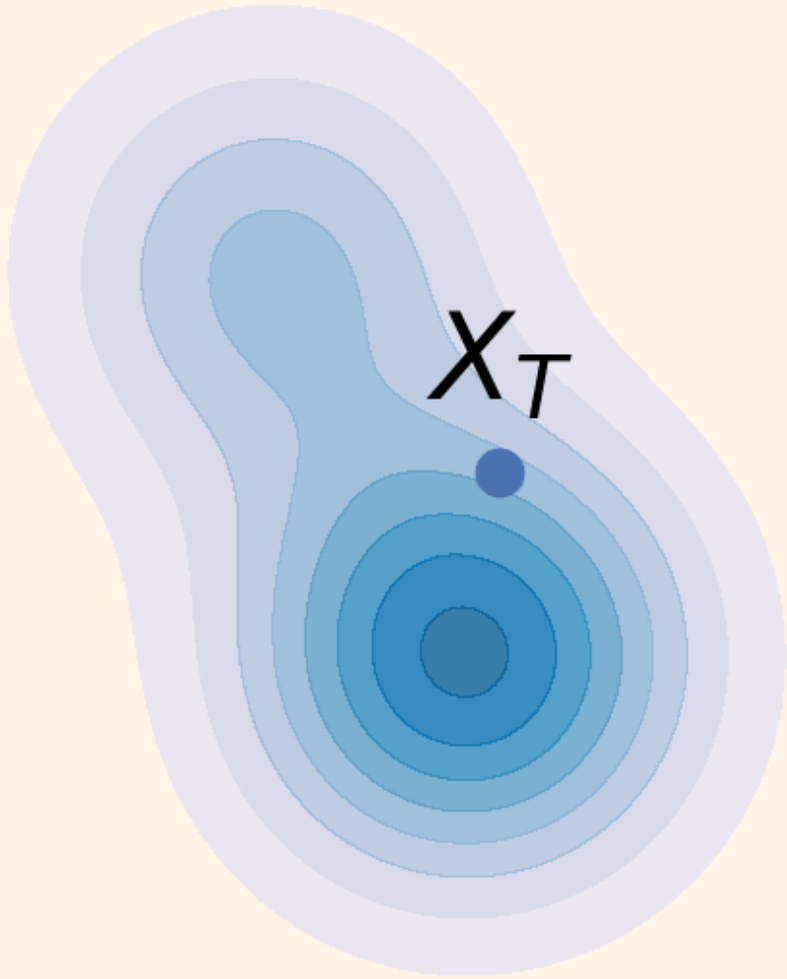

X_0
X_t
X_{t+1}
X_T


X_t
X_{t+1}


x_T


x_T




x_T

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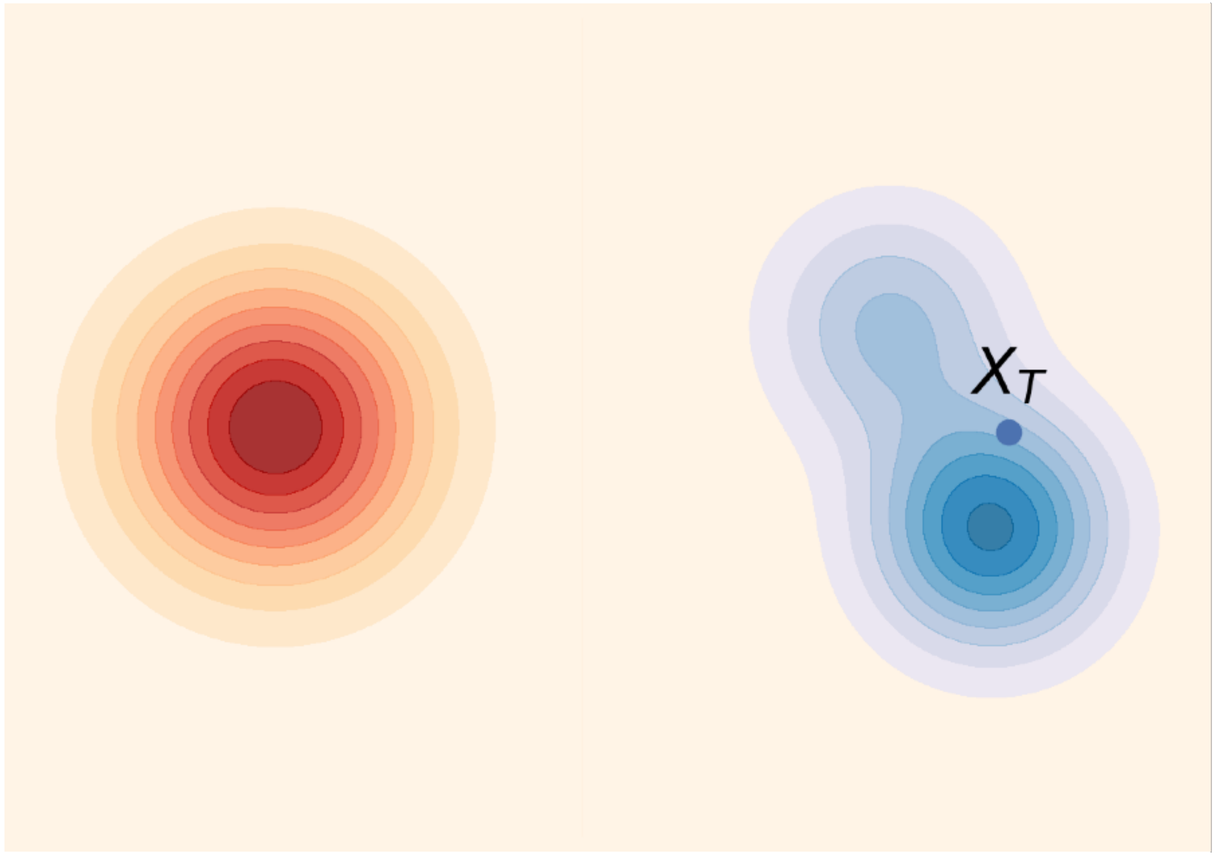

Parametrization

We find a map $Y, X_t \mapsto X_{t+1}$ and train a model $p^{\theta}_{Y|t}\left(Y \,|\, X_t\right)$:

Noise prediction: $Y = X_0$.