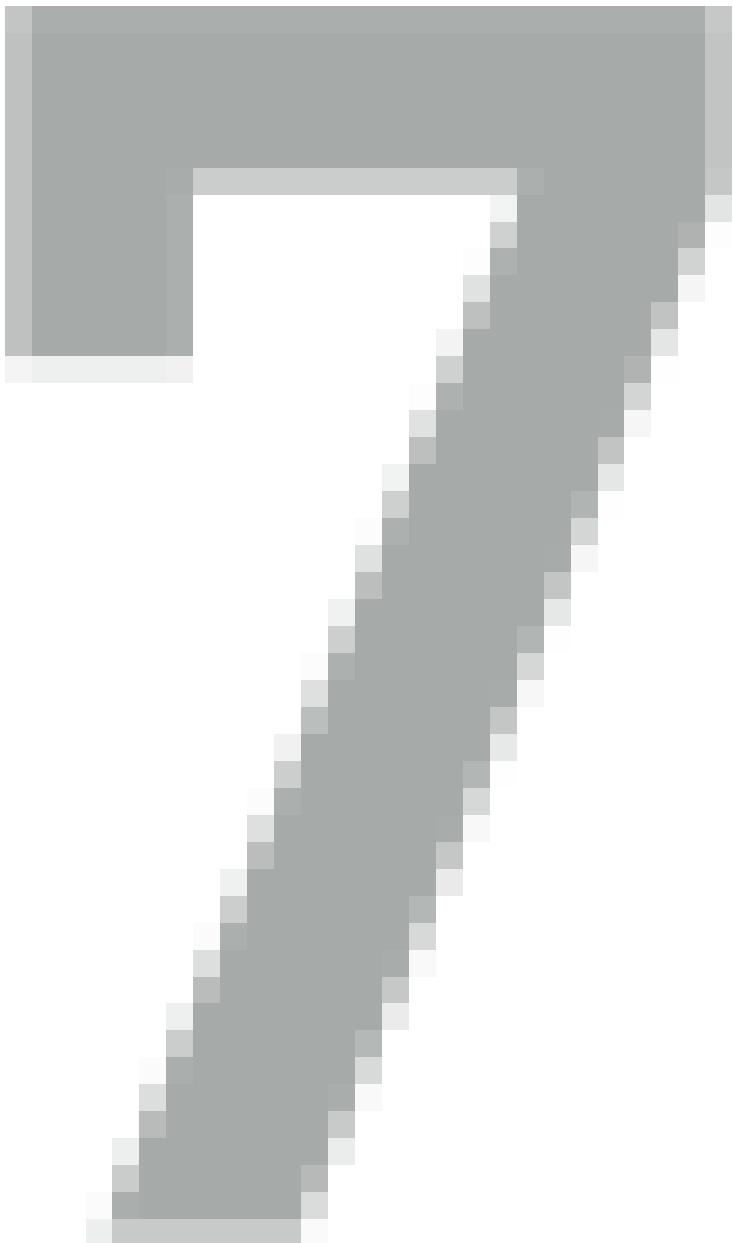




THE  
WALL  
CAMP  
PIECE





## Identity kernel:

$$K(x, dx') = \delta_x(dx')$$



1. Input  $X$

2. Return  $X' = X$

► **Transport kernel:** Given  $T : \mathbb{X} \rightarrow \mathbb{X}$

$$K(x, dx) = \delta_{T(x)}(dx')$$



1. Input  $X$
2. Return  $X' = T(X)$

► **Independent kernel:** Given  $\eta \in \mathcal{P}(\mathbb{X})$

$$K(x, dx') = \eta(dx')$$



1. Input  $X$
2. Return  $X' \sim \eta$

► **Random Walk:** If  $\mathbb{X} = \mathbb{R}^d$

$$K(x, dx') = N(\mu(x), \Sigma(x), dx')$$



1. Input  $X$
2. Return  $X' \sim N(\mu(X), \Sigma(X))$

# EXAMPLES:

► **Identity kernel:**

$$K(x, dx') = \delta_x(dx') \iff \begin{array}{l} 1. \text{ Input } X \\ 2. \text{ Return } X' = X \end{array}$$

► **Transport kernel:** Given  $T : \mathbb{X} \rightarrow \mathbb{X}$

$$K(x, dx) = \delta_{T(x)}(dx') \iff \begin{array}{l} 1. \text{ Input } X \\ 2. \text{ Return } X' = T(X) \end{array}$$

► **Independent kernel:** Given  $\eta \in \mathcal{P}(\mathbb{X})$

$$K(x, dx') = \eta(dx') \iff \begin{array}{l} 1. \text{ Input } X \\ 2. \text{ Return } X' \sim \eta \end{array}$$

► **Random Walk:** If  $\mathbb{X} = \mathbb{R}^d$

$$K(x, dx') = N(\mu(x), \Sigma(x), dx') \iff \begin{array}{l} 1. \text{ Input } X \\ 2. \text{ Return } X' \sim N(\mu(X), \Sigma(X)) \end{array}$$

# MARKOV KERNELS V3: OPERATORS