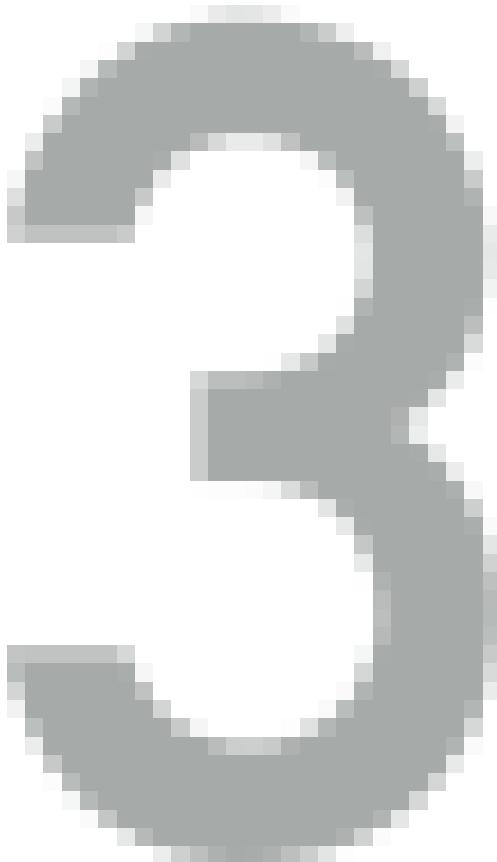
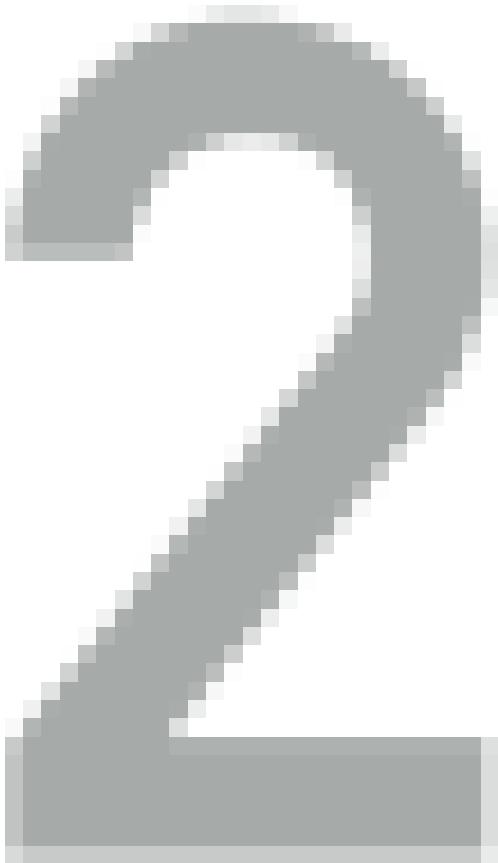


CAMPFRANDONKAWACRI



Consider the random walk on a circle \mathbb{Z}_n , where n is even.

► Suppose $X_0 = 0$ and $\mathbb{P}[X_t = m \mid X_{t-1} = n] = K(n, m)$ where

$$K(n, m) = \frac{1}{4}\delta_{n-1}(m) + \frac{1}{2}\delta_n(m) + \frac{1}{4}\delta_{n+1}(m)$$

X_t is stationary with respect to $\sigma = \text{Uniform}[\bar{Z}_n]$

This is a lazy random walk on a circle, mixes after $O(n^2)$ iterations

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if(m) acc1 = 0 if n is even and f(n) = 0  
if(m) acc1 = 1 if n is odd and f(n) = 1
```

- ▶ For all $t > 0$ we have $f(X_t)$ are iid and ESS is $T_{\text{ESS}}[f] = T$

$$\mathbb{P}[f(X_t) = 1] = \frac{1}{2} = \pi[f]$$

EXAMPLE RANDOM WALK ON A CIRCLE

- ▶ Consider the random walk on a circle \mathbb{Z}_n where n is even.
- ▶ Suppose $X_0 = 0$ and $\mathbb{P}[X_t = m \mid X_{t-1} = n] = K(n, m)$ where

$$K(n, m) = \frac{1}{4}\delta_{n-1}(m) + \frac{1}{2}\delta_n(m) + \frac{1}{4}\delta_{n+1}(m)$$

- ▶ X_t is stationary with respect to $\pi = \text{Uniform}[\mathbb{Z}_n]$
- ▶ This is a lazy random walk on a circle, mixes after $O(n^2)$ iterations
- ▶ $f(n) = 1$ if n is even and $f(n) = 0$ if n is odd
- ▶ For all $t > 0$ we have $f(X_t)$ are iid and ESS is $T_{\text{ESS}}[f] = T$

$$\mathbb{P}[f(X_t) = 1] = \frac{1}{2} = \pi[f]$$

EXAMPLE RANDOM WALK ON A CIRCLE