

# Detailed Balance

**If**  $\pi(x)T(x \rightarrow x') = \pi(x')T(x' \rightarrow x)$

**Then**  $\pi(x') = \sum_x \pi(x)T(x \rightarrow x')$

**Proof** 
$$\begin{aligned} \sum_x \pi(x)T(x \rightarrow x') &= \sum_x \pi(x')T(x' \rightarrow x) \\ &= \pi(x') \sum_x T(x' \rightarrow x) \end{aligned}$$