

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
$$\begin{aligned} \sum_x \pi(x)T(x \rightarrow x') &= \sum_x \pi(x')T(x' \rightarrow x) \\ &= \pi(x') \underbrace{\sum_x T(x' \rightarrow x)}_1 \end{aligned}$$