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1. $H_0: X=-1+n$, $H_1: X=1+n$ $\quad n \overset{iid}{\sim} N(0,\frac{1}{2})$, $\sigma=\frac{\sqrt{2}}{2}$, $\xi=1/2$

贝叶斯准则: $\frac{p_1(x)}{p_0(x)} \underset{H_0}{\overset{H_1}{\gtrless}} \frac{\xi(C_0-C_{00})}{(1-\xi)(C_{01}-C_{11})} = \frac{3}{6} = \frac{1}{2}$

$\Rightarrow \quad \frac{p_1(x)}{p_0(x)} \underset{H_0}{\overset{H_1}{\gtrless}} \frac{1}{2} \quad \Rightarrow \quad e^{4x} \underset{H_2}{\overset{H_1}{\gtrless}} \frac{1}{2} \quad \Rightarrow \quad x \underset{H_0}{\overset{H_1}{\gtrless}} -\frac{1}{4}\ln 2 = V_T$

平均代价 $C=\Big[C_{00}Q(-\frac{V_T+1}{\sigma})+C_{10}Q(\frac{V_T+1}{\sigma})$

$+C_{01}Q(-\frac{V_T-1}{\sigma})+C_{11}Q(\frac{V_T-1}{\sigma})\Big]\cdot\frac{1}{2} \approx 1.82$