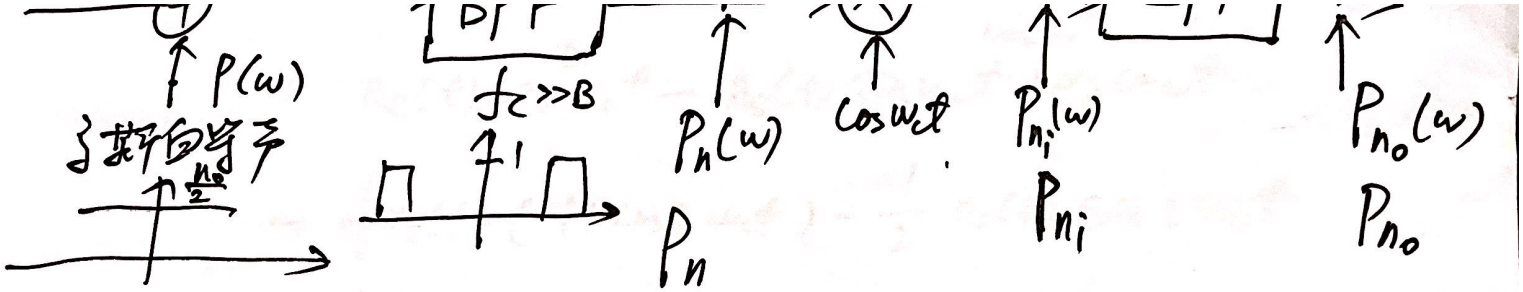
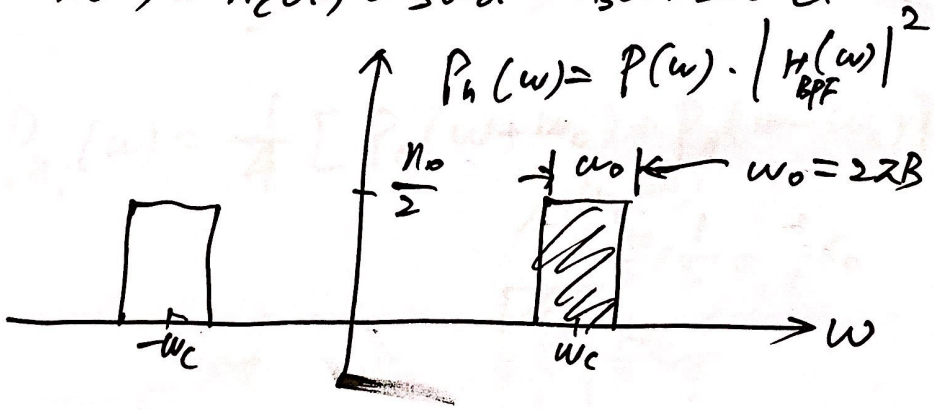
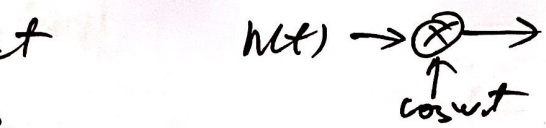


$$n(t) = n_c(t)\cos w_c t - n_s(t)\sin w_c t$$



$$P_n = \frac{1}{2\pi}\int_{-\infty}^{\infty} P_n(w)\,dw = \frac{1}{2\pi}\times 2\times\frac{n_0}{2}\times 2\pi B = n_0 B$$

$$n_i(t) = n(t)\cos\omega_c t$$

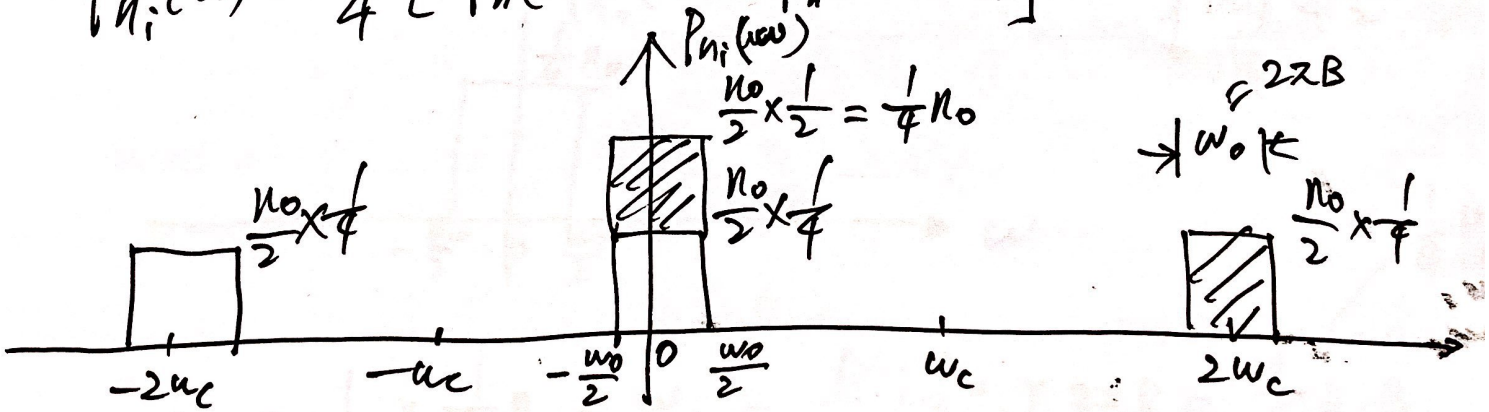


$$= n_c(t)\cos^2\omega_c t - n_s(t)\sin\omega_c t\cos\omega_c t$$

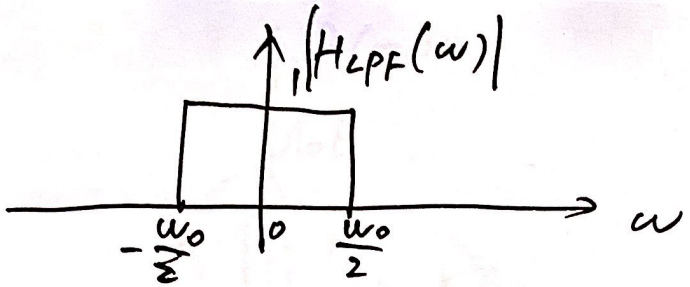
$$= \frac{1}{2}n_c(t)(1+\cos 2\omega_c t) - \frac{1}{2}n_s(t)\sin 2\omega_c t$$

$$= \frac{1}{2}n_c(t) + \frac{1}{2}n_c(t)\cos 2\omega_c t - \frac{1}{2}n_s(t)\sin 2\omega_c t$$

$$P_{n_i}(\omega) = \frac{1}{4}[P_n(\omega+\omega_c) + P_n(\omega-\omega_c)]$$



$$P_{ni} = \frac{1}{2\pi}\times 4 \times \frac{n_0}{2}\times\frac{1}{4}\times B\cdot 2\pi = \frac{1}{2}n_0 B$$

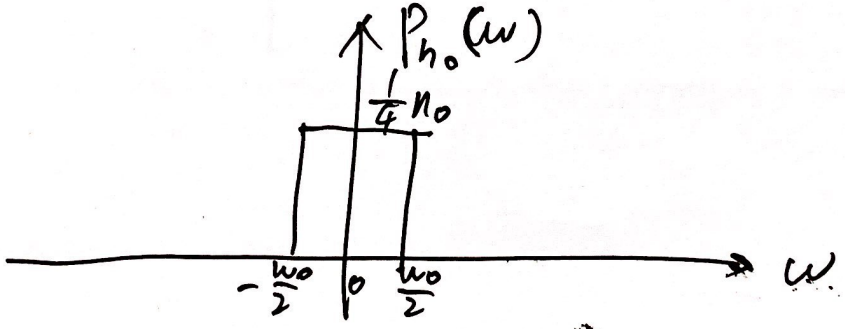


LPF 带宽 $\frac{1}{2}B$.

$$n_o(t) = \frac{1}{2} n_c(t)$$

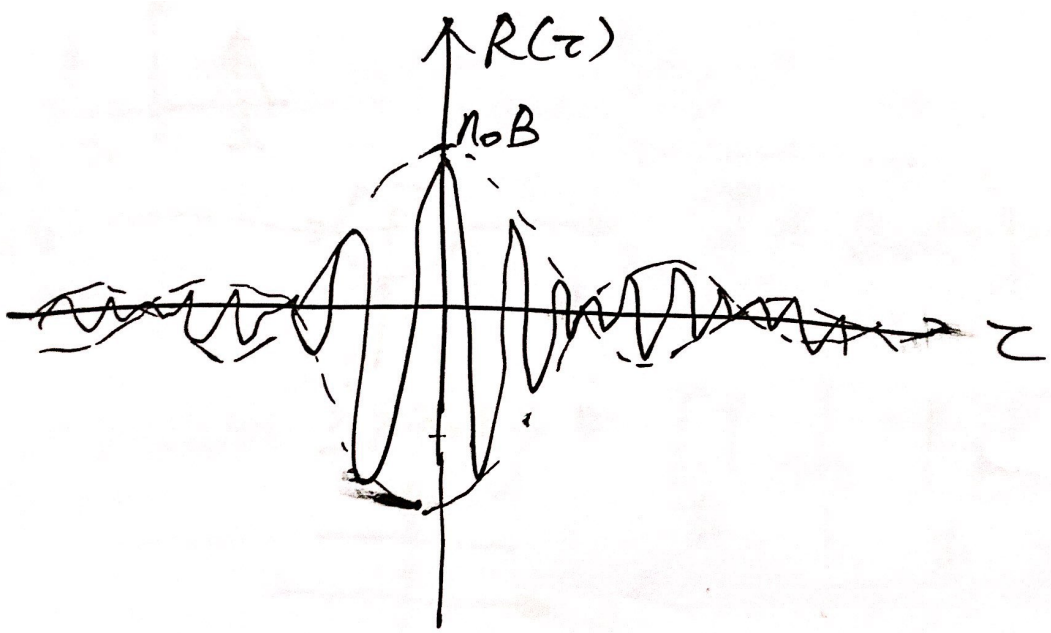
$$P_{n_o}(\omega) = P_{n_i}(\omega) \cdot \left|H_{LPF}(\omega)\right|^2 = \frac{1}{4}\left[P_n(\omega + \omega_c) + P_n(\omega - \omega_c)\right]$$

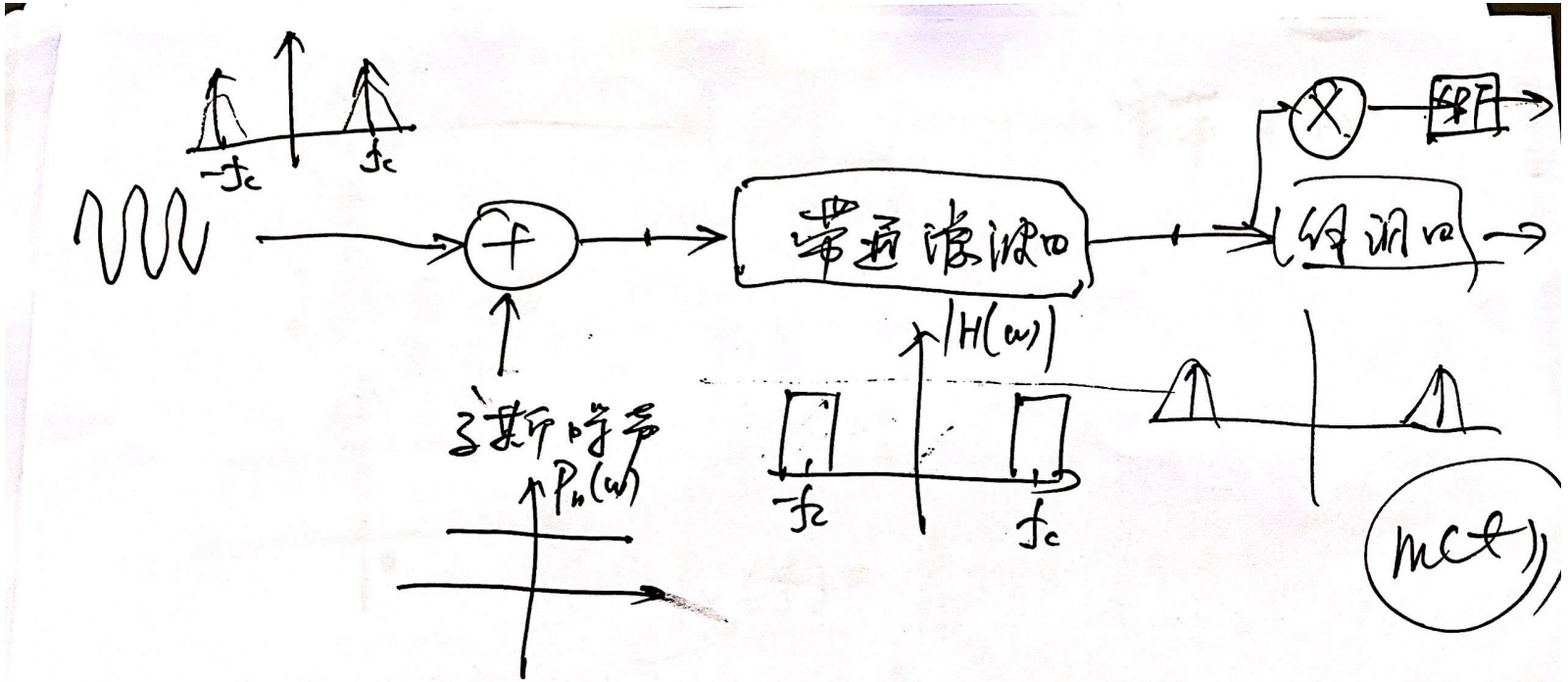
$$|\omega| \le \frac{\omega_0}{2}$$

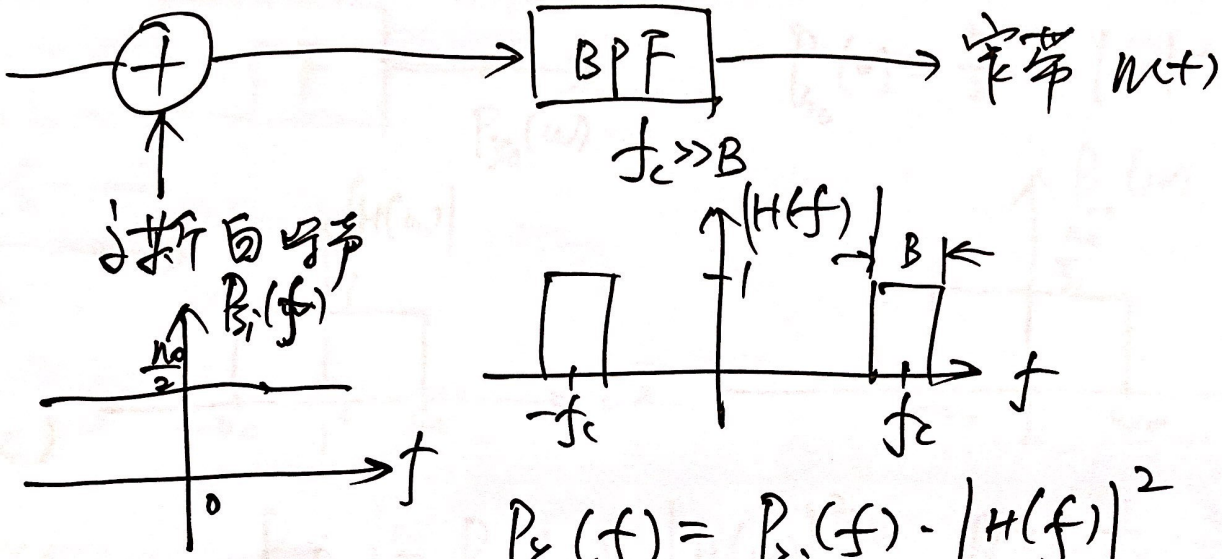


$\frac{1}{4}P_n$

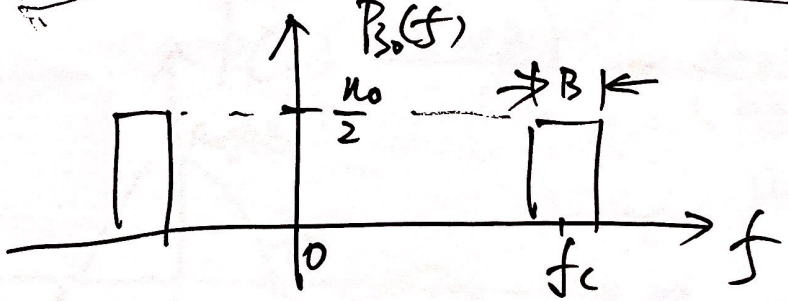
$$P_{n_o} = \frac{1}{2\pi} \times \frac{1}{4} n_0 \times \omega_0 = \frac{1}{2\pi} \times \frac{1}{4} n_0 \times 2\pi B = \frac{1}{4} n_0 B$$





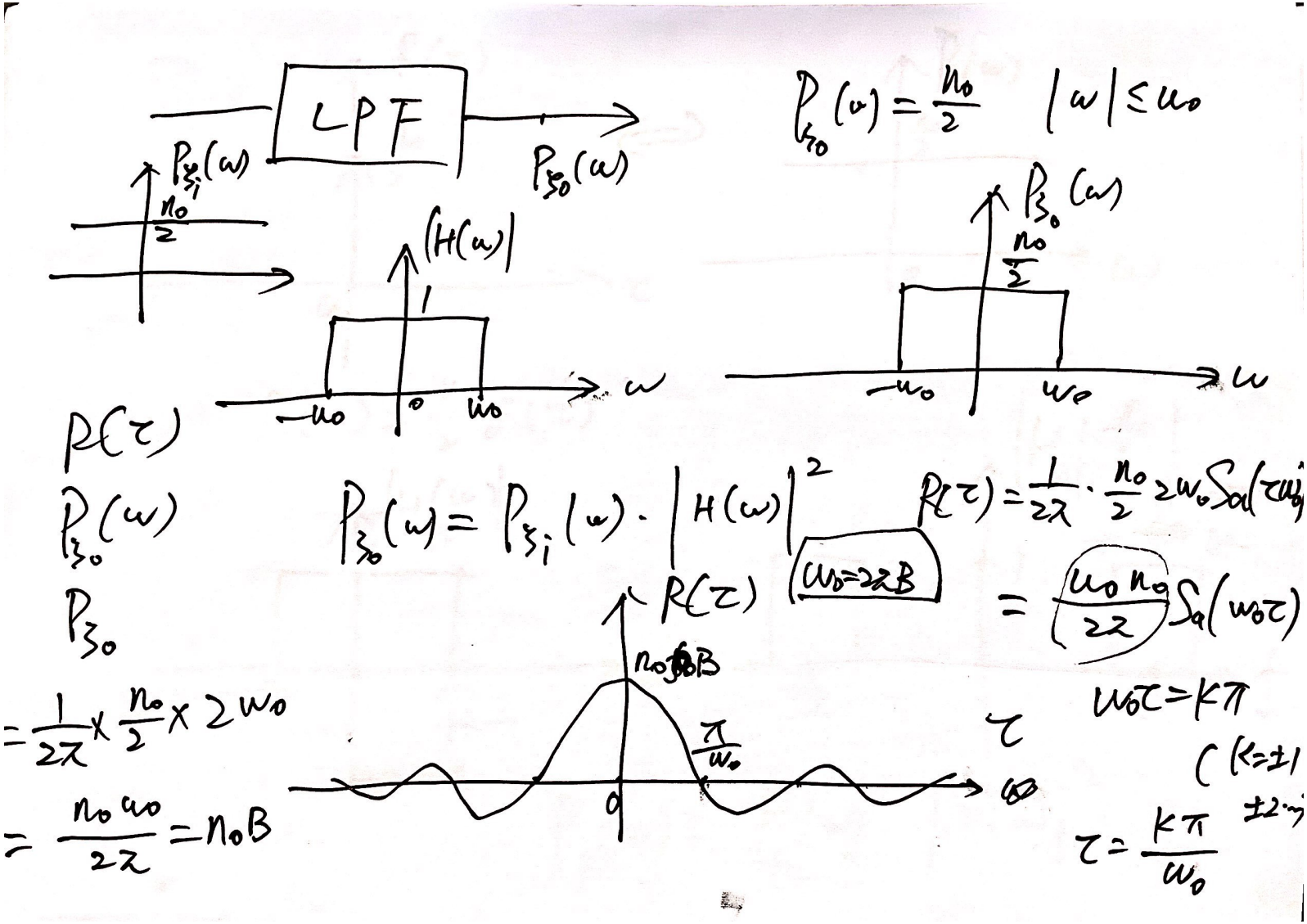


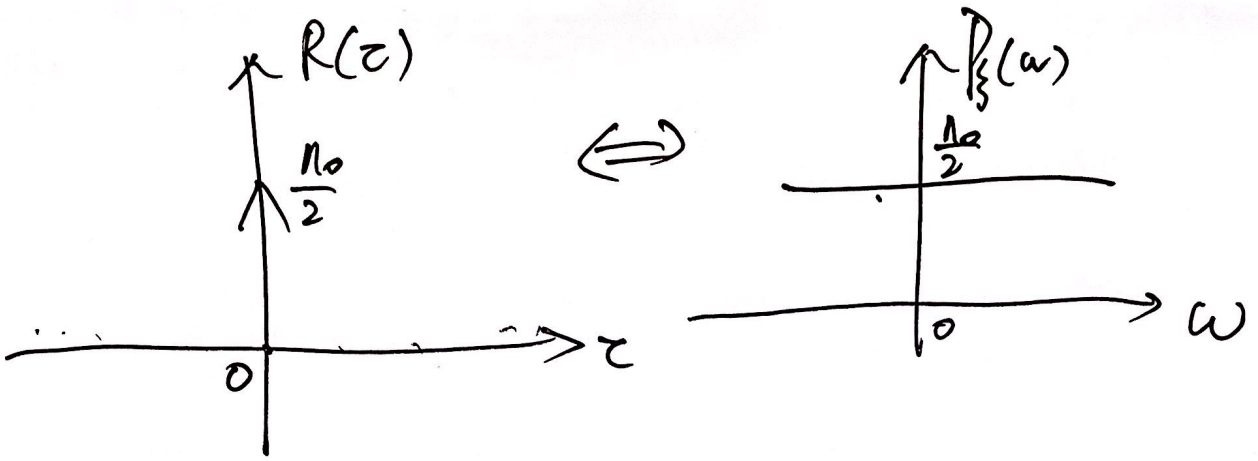
$$P_{\xi_0}(f) = P_{\xi_i}(f) \cdot |H(f)|^2$$



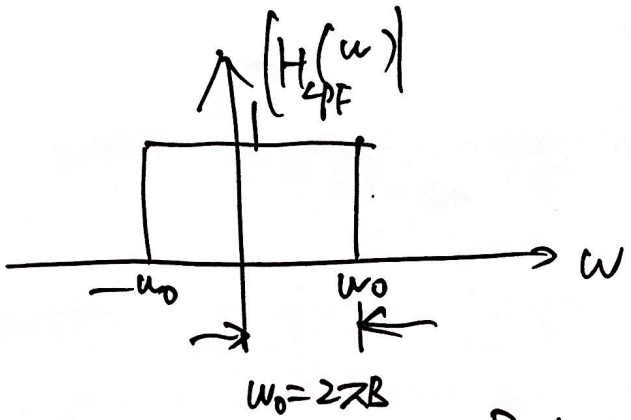
$$P_{\xi_0} = 2 \times \frac{n_0}{2} \times B$$

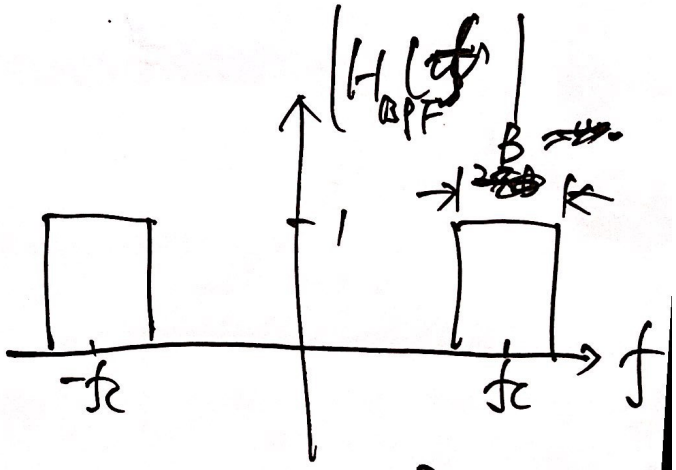
$$= n_0 B \ (W)$$


LPF
$P_{\xi_i}(\omega)$
$P_{\xi_o}(\omega)$
$\frac{n_0}{2}$
$|H(\omega)|$
1
$-\omega_0$
0
ω_0
ω
$P_{\xi_o}(\omega) = \frac{n_0}{2} \quad |\omega| \le \omega_0$
$P_{\xi_o}(\omega)$
$\frac{n_0}{2}$
$-\omega_0$
ω_0
ω
$R(\tau)$
$P_{\xi_o}(\omega)$
P_{ξ_o}
$P_{\xi_o}(\omega) = P_{\xi_i}(\omega) \cdot |H(\omega)|^2$
$\omega_0 = 2\pi B$
$R(\tau) = \frac{1}{2\pi} \cdot \frac{n_0}{2} 2\omega_0 Sa(\tau\omega_0)$
$= \frac{\omega_0 n_0}{2\pi} Sa(\omega_0\tau)$
$= \frac{1}{2\pi} \times \frac{n_0}{2} \times 2\omega_0$
$= \frac{n_0 \omega_0}{2\pi} = n_0 B$
$R(\tau)$
$n_0 B$
$\frac{\pi}{\omega_0}$
τ
0
$\omega_0\tau = k\pi$
$(k = \pm 1$
$\pm 2 \cdots$
$\tau = \frac{k\pi}{\omega_0}$



$$R(\tau)=\frac{n_0}{2}\delta(\tau)$$





$$P_o(\omega)=P_i(\omega)\cdot|H(\omega)|^2$$