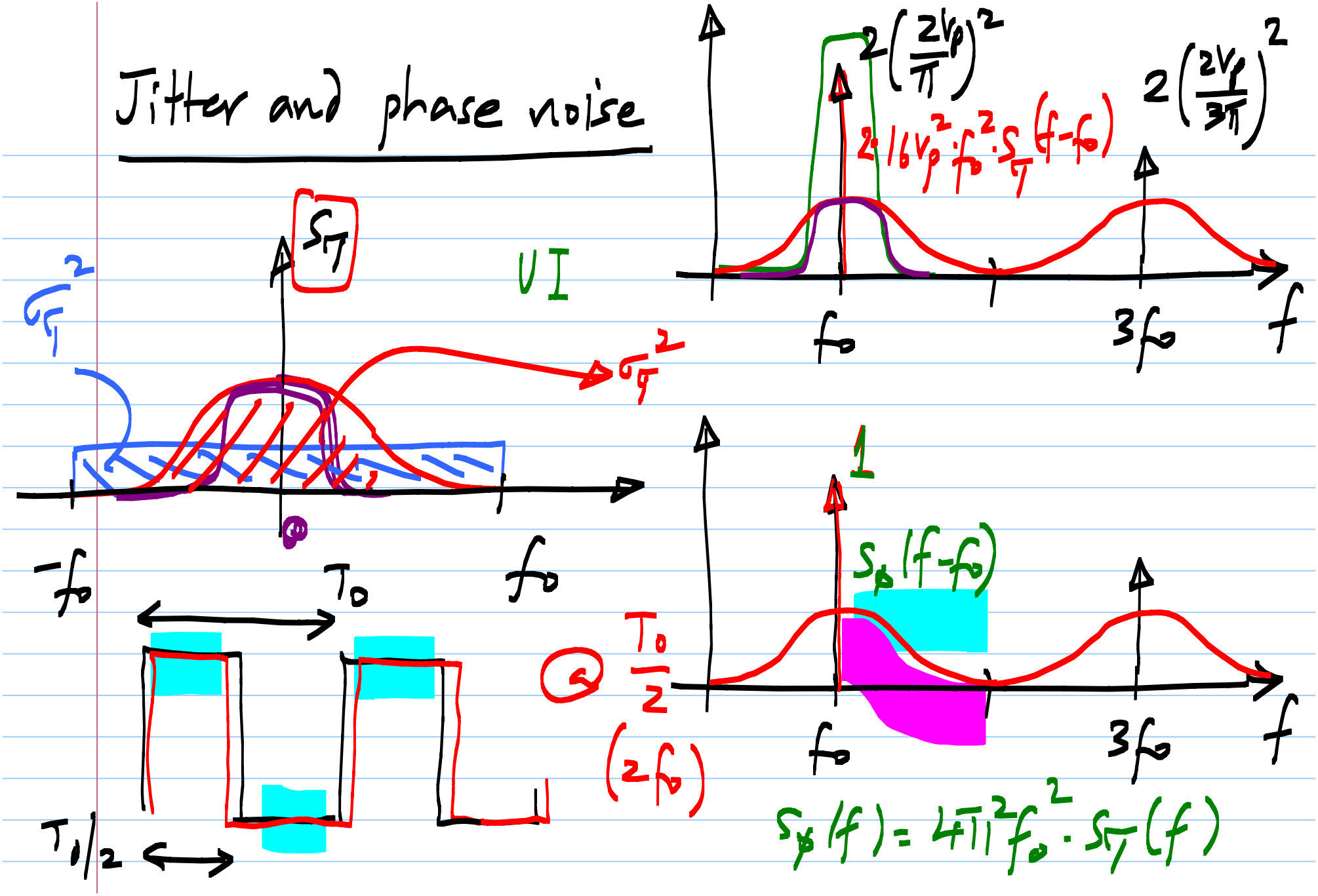
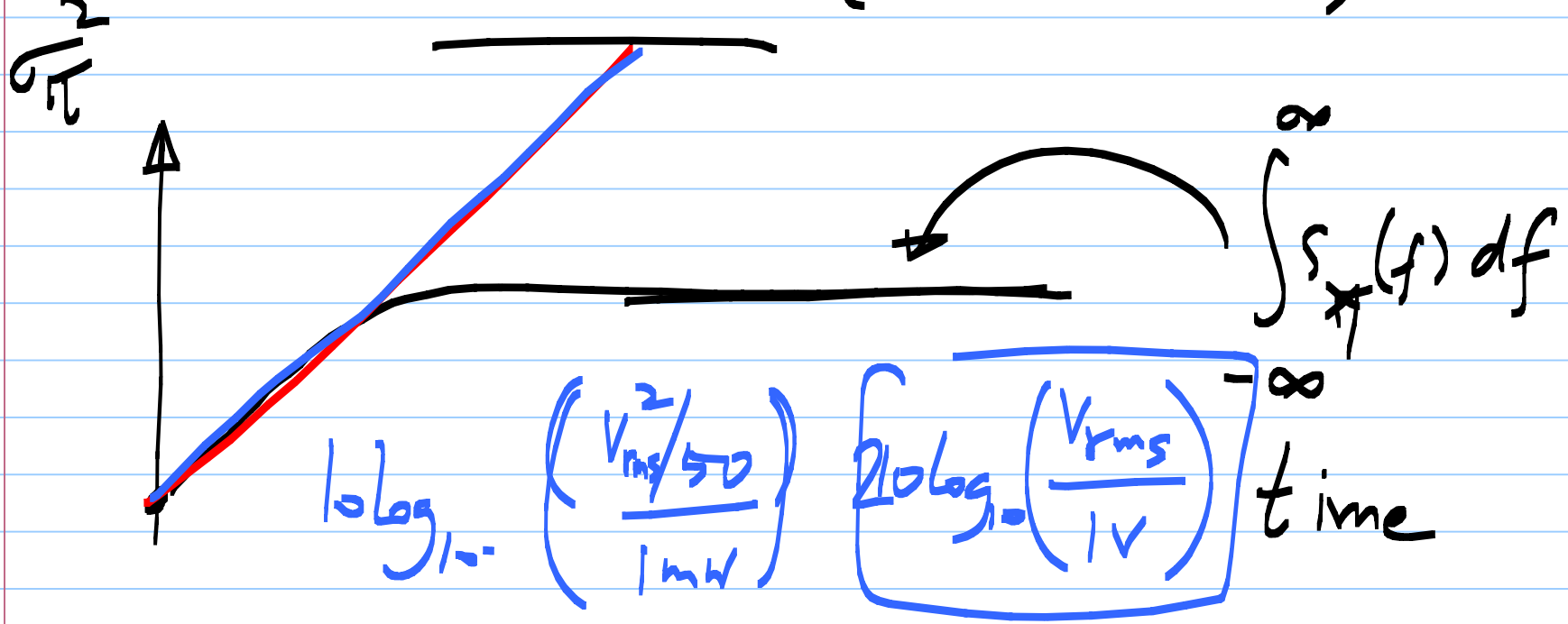
Jitter and phase noise

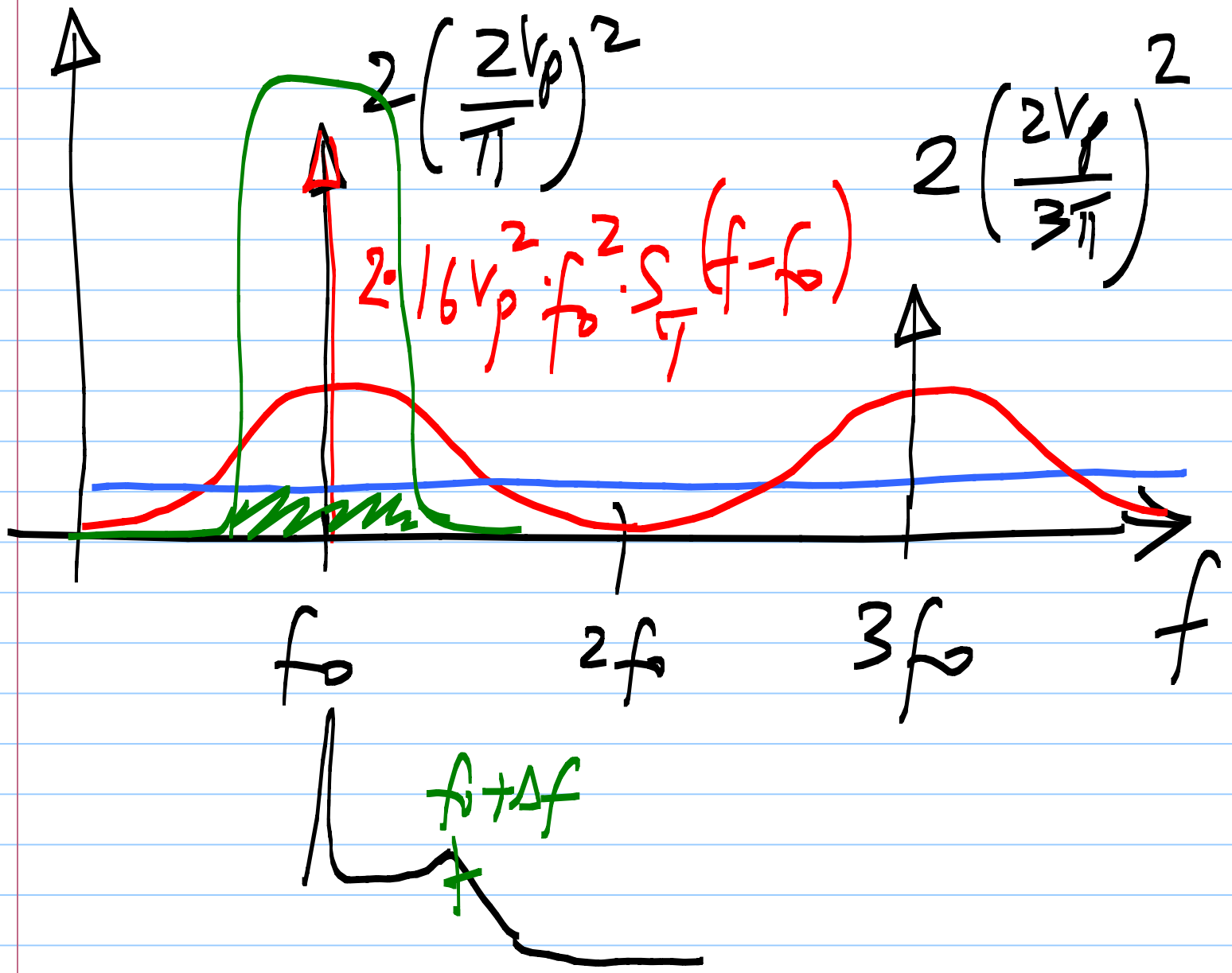


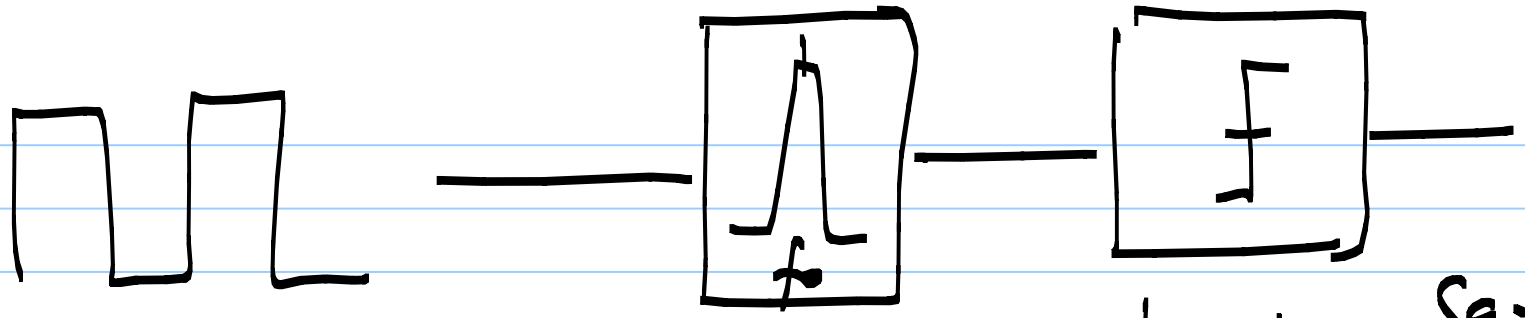
10 Gbps — loops = T_0 / 1ps rms jitter

(3.6°) 0.02π radians rms

0.01 UI (unit intervals)




$2\left(\frac{2V_p}{\pi}\right)^2$
$2\left(\frac{2V_p}{3\pi}\right)^2$
$2 \cdot 16 V_p^2 f_0^2 \cdot S_T(f-f_0)$
f_0
$2f_0$
$3f_0$
f
$f_0+\Delta f$

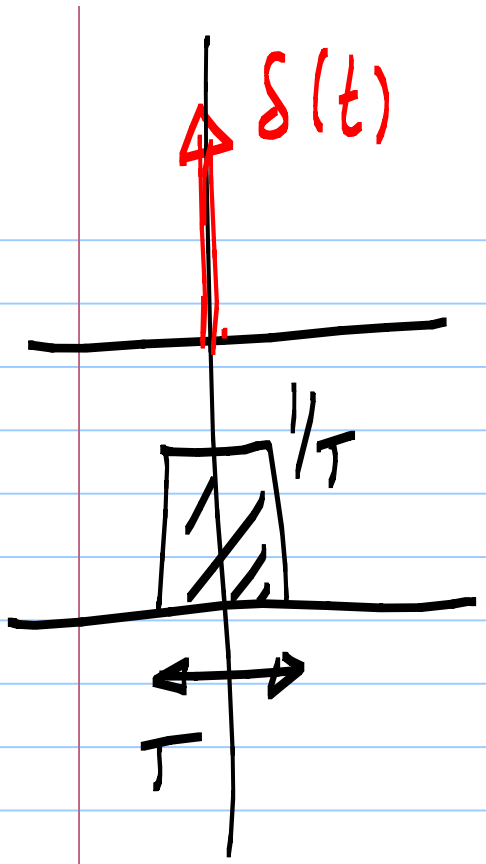


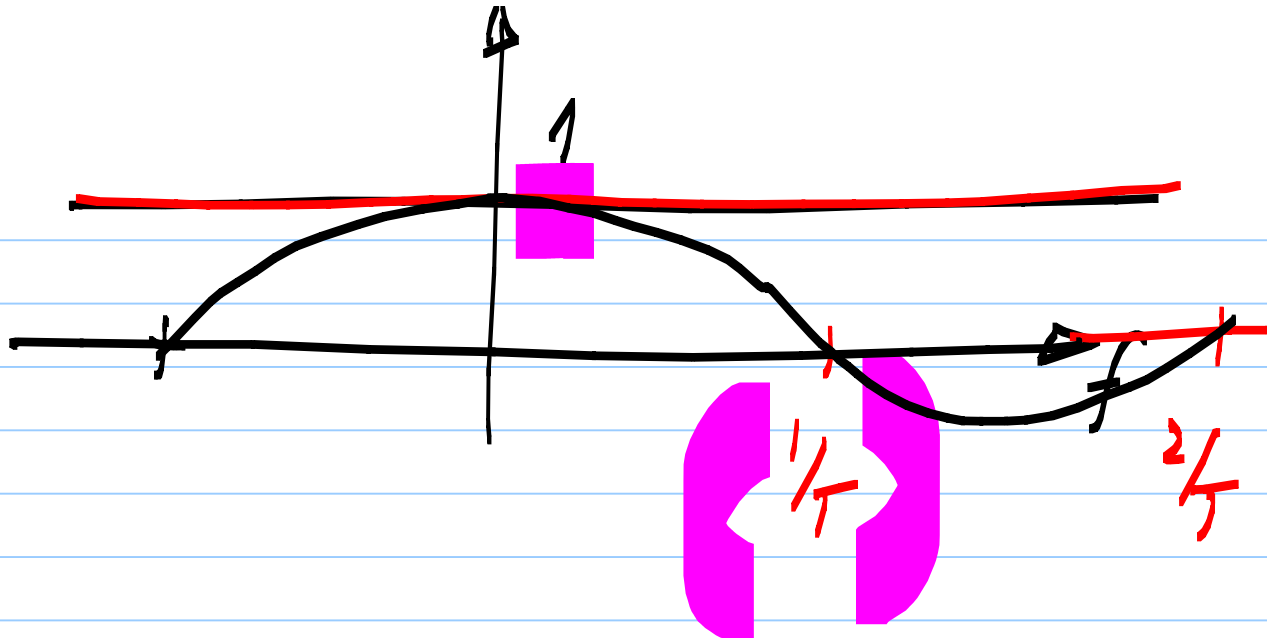
Jittery sq. wave @ f₀

BPF @ the signal frequency acts as a lowpass filter for the jitter

Limiter

Sq. wave w/ less jitter


δ(t)
1/T
T


1
1/T
2/T