

For Thursday:

1) In our discussion of boxcar averaging we considered two measuring intervals:

T1: when $V_{mi} = V_{Bi} + V_{si} + V_{ni}$

T2: when $V_{mi} = V_{Bi} + V_{ni}$

V_m = measured

V_B = constant background

V_s = signal we want

V_n = symmetric noise (like Johnson noise)

Find the ratio of T_1/T_2 that minimizes the uncertainty in V_s .

2) Show that

$$\int_0^{2\pi} \sin(mx) \cos(nx) dx = 0$$

for all integers m, n .