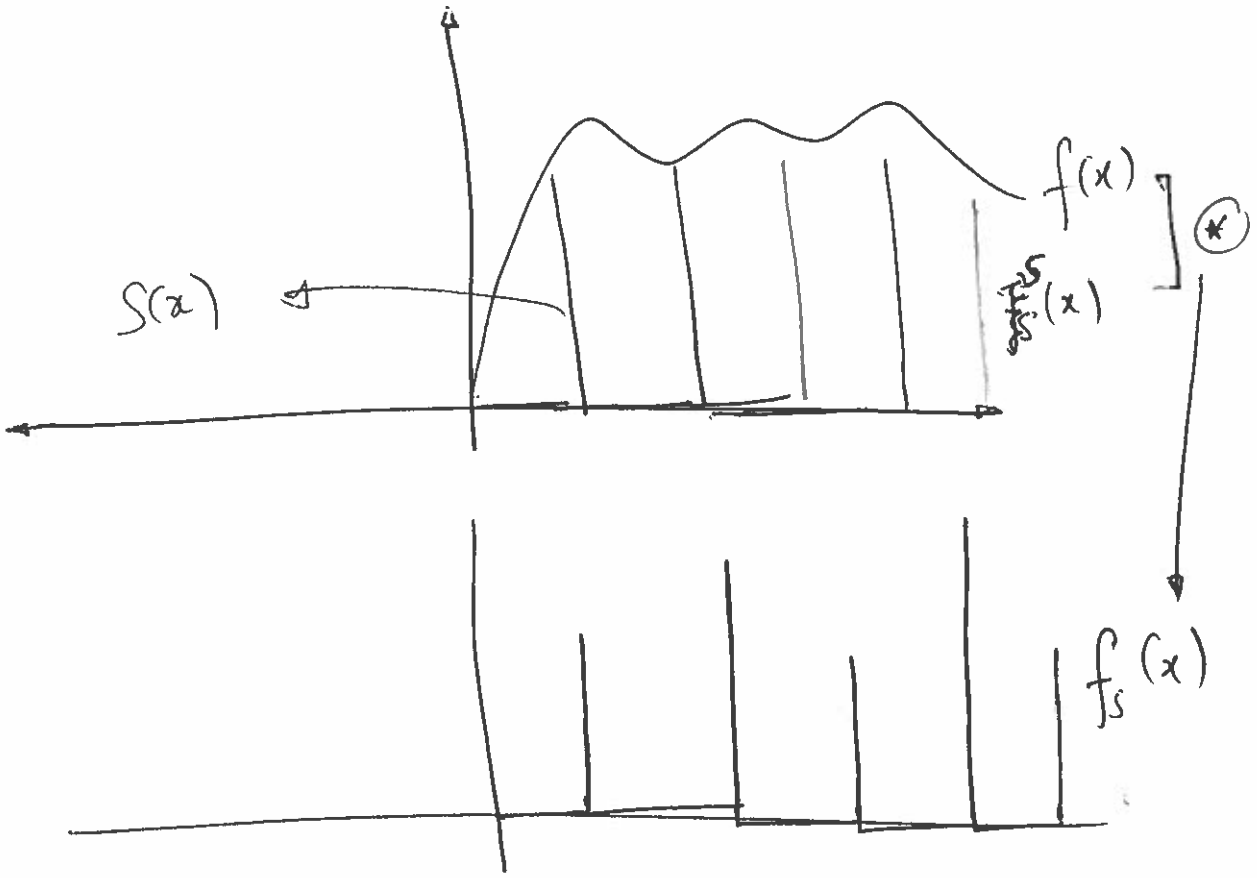


$$f_s(x) = f(x) \cdot S(x)$$

$\xrightarrow{\mathcal{F}}$ Fourier Transform

$$F_s(\omega) = F(\omega) \circledast S(\omega)$$

(ξ) / (ω) same

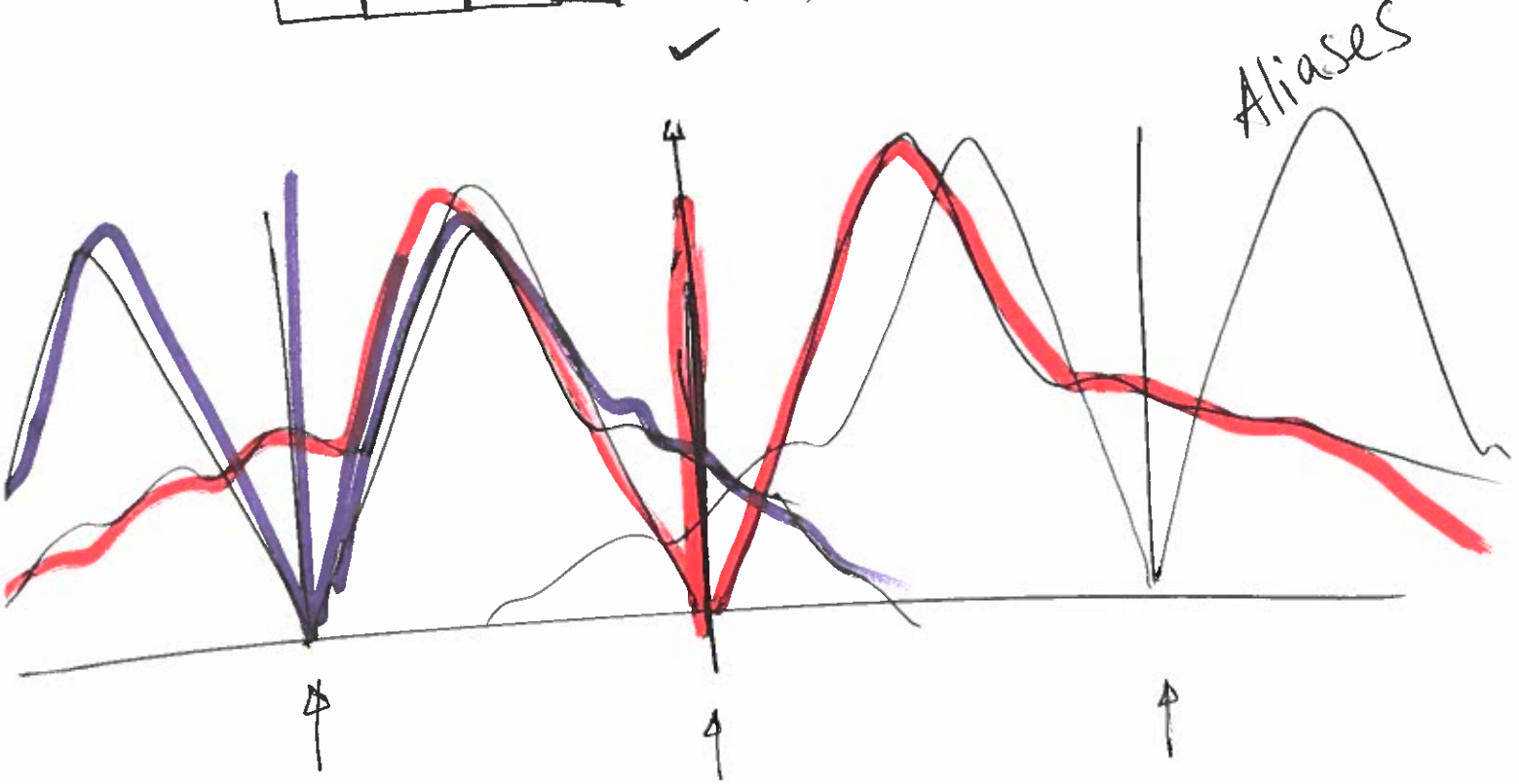
freq var.

?

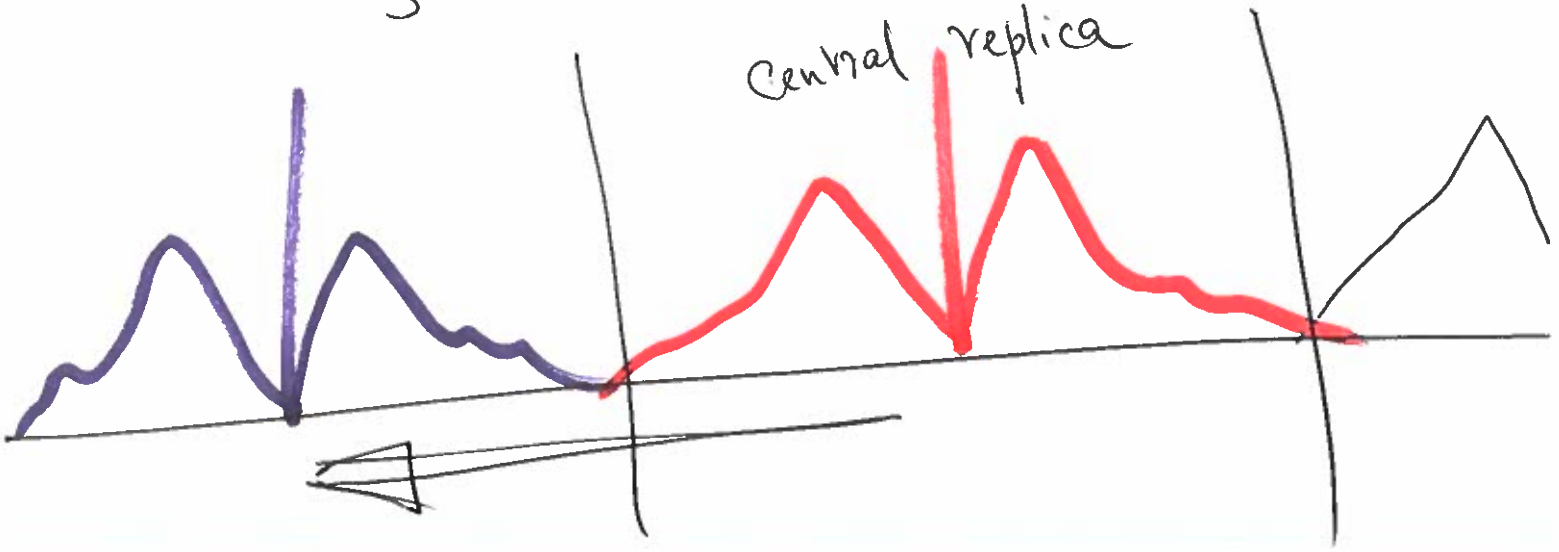
$S(x)$

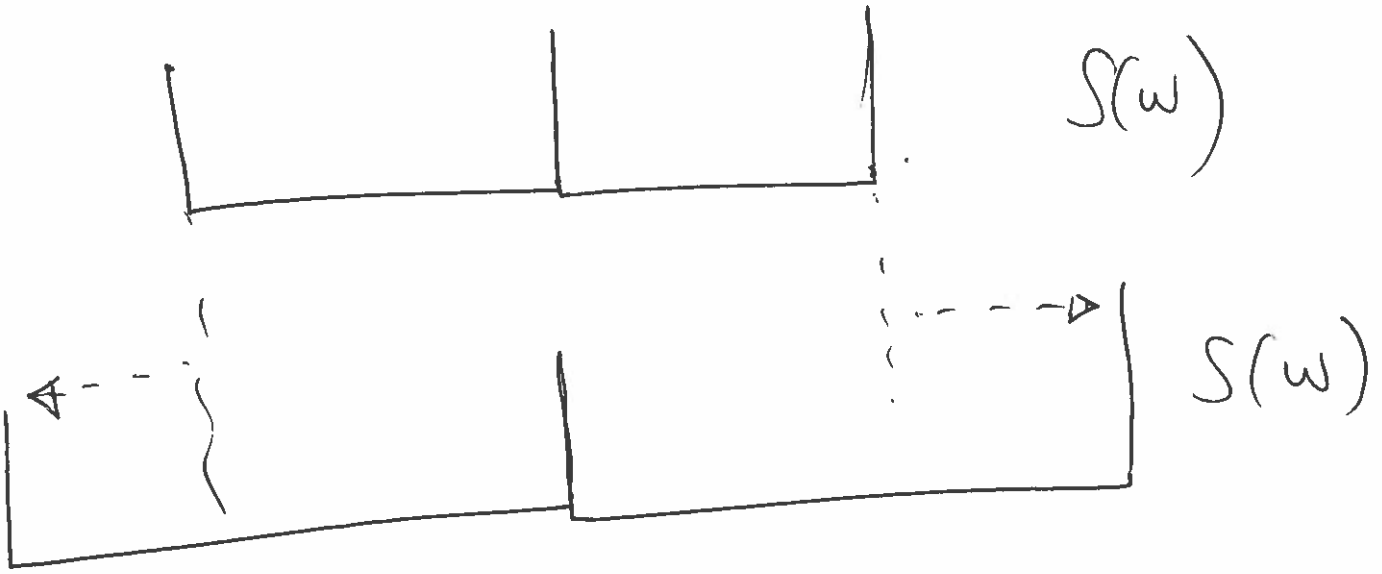
Comb
↓
F.T.
↓
Comb

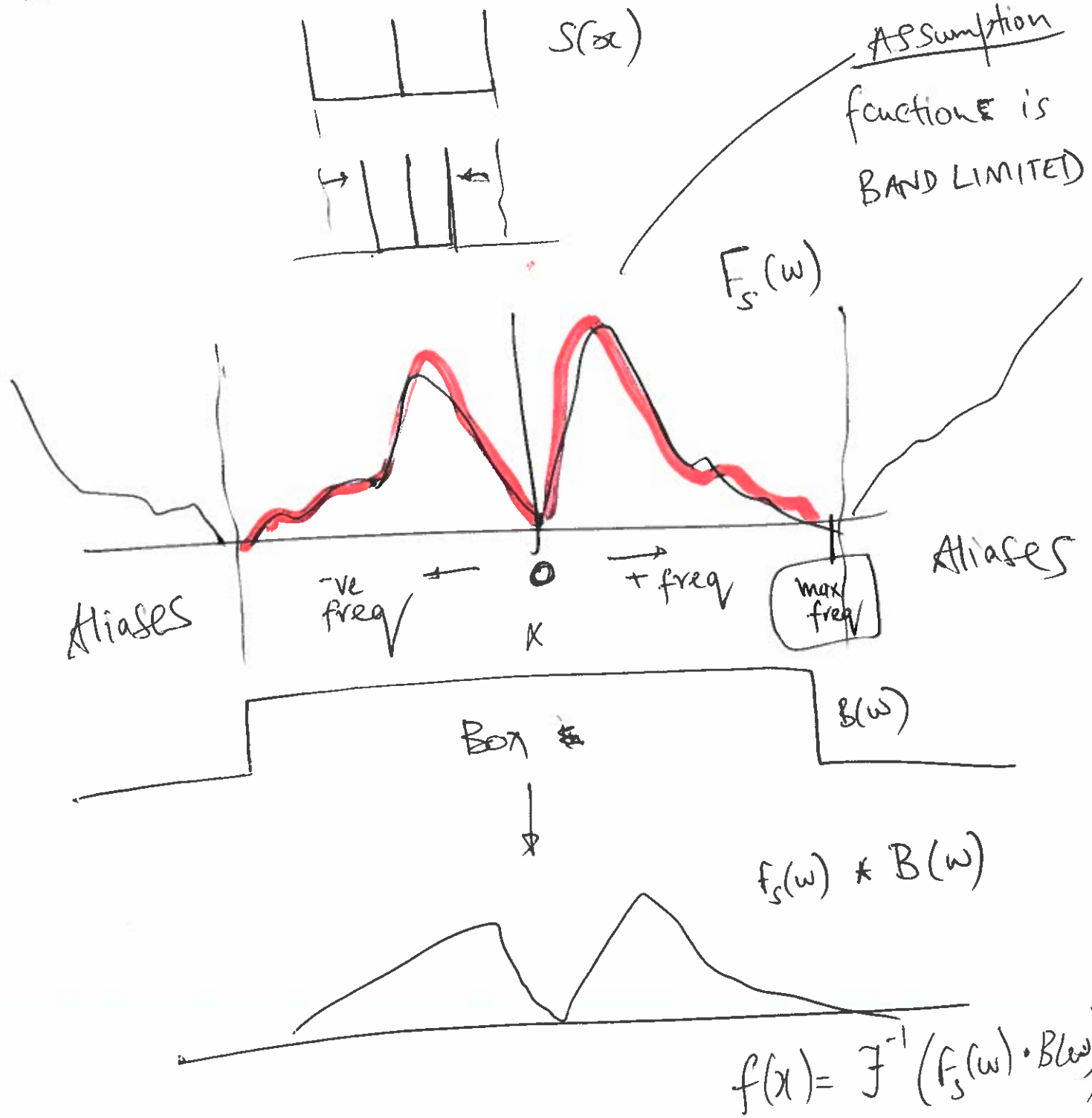
$S(\omega)$ ✓



$F_S(\omega)$ = Sum of above




S(w)
S(w)


S(x)
Assumption
function is
BAND LIMITED
$F_s(w)$
Aliases
-ve freq
+ freq
max freq
Aliases
B(w)
Box
$f_s(w) * B(w)$
$f(x) = \mathcal{F}^{-1}(F_s(w) \cdot B(w))$

Bandlimited functions

Sample at twice max freq. for perfect reconstruction

Nyquist - Shanon / Sampling Theorem