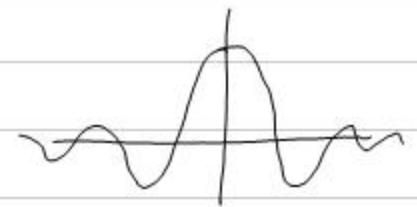
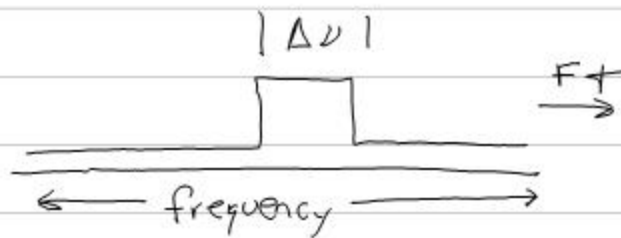
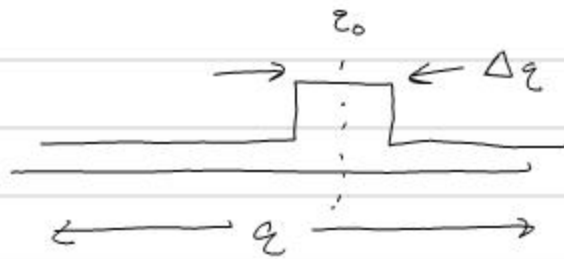
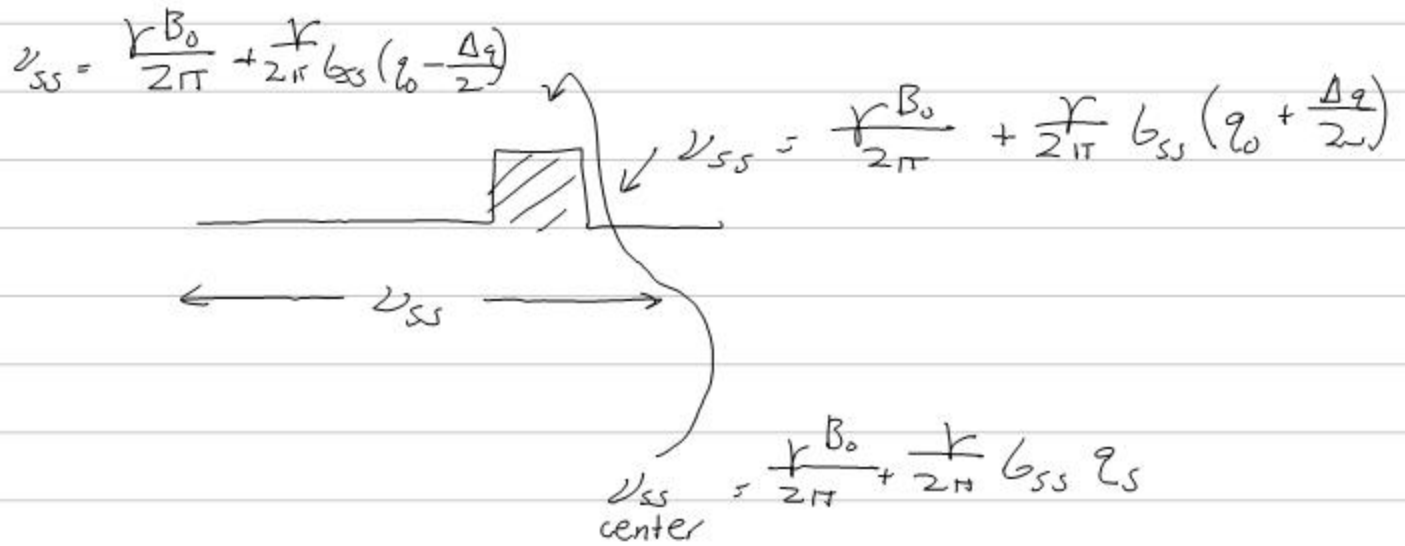


Slice Selection: $b_{ss} \rightarrow$ to select a slice
 \perp to b_{ss} .



Sinc function

$$\frac{\sin(\pi \Delta \nu t)}{\pi \Delta \nu t} = B_1(t)$$

nodes at $t = \frac{1}{\Delta \nu}$.

Slice Selection Issues:

- adjacent slice bleed through
- flow [can also measure velocity]
- M_{xy} phase \rightarrow self refocusing pulses

- SAR \Rightarrow low average B_1 , avoid peak B_1

Ex:

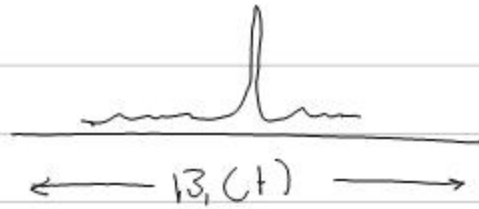


Image Acquisition Time + Field of View

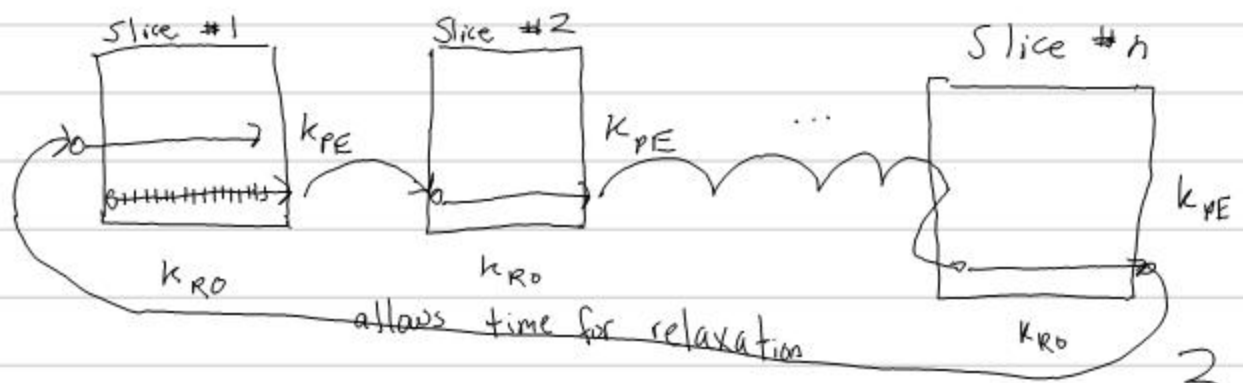
- N = number of phase encode steps
- TR = time to repetition between "starting" RF pulses
- N_{acq} = # of acquisitions averaged
- T_{acq} = total data acquisition time

True 3D: sample k-space in three dimensions

- phase encode along x & y .
- readout along z
- $T_{acq} = N_x \cdot N_y \cdot TR \cdot N_{acq}$

Single 2D Slice: phase encode along x

- readout along y
- $T_{acq} = N_x \cdot TR \cdot N_{acq}$



Ex: Say, 50ms for a line of k-space.

· 90° slice select

· $TR_{opt} = 1.27 \cdot T_1$

$$T_1 (4.7 T) = 1.4s$$

T_{min}

$$\text{So, } T_{opt} = 1.4s \cdot 1.27 = 1.8s$$

$$1.8s / 50ms = 36 \text{ slices in } 1.8s$$