

Homework no. 5

Modern Techniques in Biophysics

Topic: Magnetic Resonance Imaging

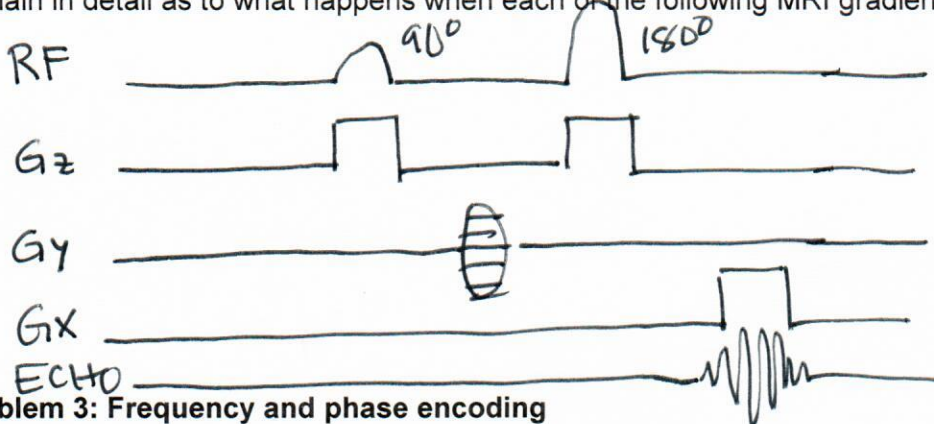
Due date: March 2, 2015

Problem 1: Spin-echo vs Gradient ECHO

Draw and explain explicitly the fundamental difference between spin-echo and gradient echo.

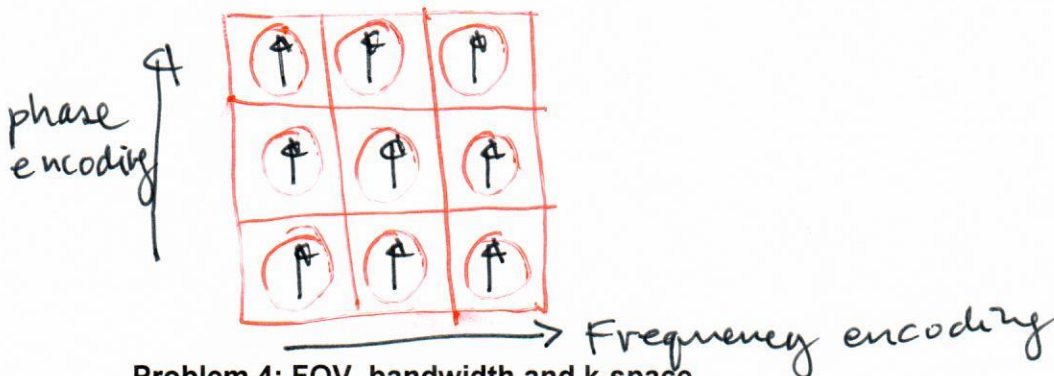
Problem 2: MRI Pulse Sequence

Explain in detail as to what happens when each of the following MRI gradients are turned ON.



Problem 3: Frequency and phase encoding

Draw and explain what happens to the nuclear spins in each pixel as the frequency and phase-encoding gradients are turned ON.



Problem 4: FOV, bandwidth and k-space

Explain in detail the relationship between field of view (FOV), bandwidth and k-space in MRI.