HST.583 Functional Magnetic Resonance Imaging: Data Acquisition and Analysis
Fall 2008

Lab Question 1: Draw the calculated SNR0 as a function of voxel size and comment on your findings. Describe the differences if any, between the human and phantom data.

Lab Question 2: Draw the calculated tSNR as a function of voxel size and comment on your findings. Describe the differences if any, between the human and phantom data.

Lab Question 3: Show the relationship of tSNR as a function of SNR0 when SNR0 is modulated by the voxel size. Describe the differences, if any, between the human and phantom data. What is the asymptotic limit for tSNR?

Lab Question 4: You are asked to perform an fMRI study of medial temporal lobe activation at a high field strength. Which acquisition parameters would you consider most important to optimize in order to achieve the best activation results? For a 3T scanner provide a suggested set of acquisition parameters.

Lab Question 5: Draw ROIS on various tissue types, generate the tSNR as a function of SNR0 in gray matter, white matter and CSF. Record mean signal and standard deviation of the noise. Comment on your findings.