

Abstract Submitted  
for the PSF15 Meeting of  
The American Physical Society

**A Study on the MRI Physics and Its Application to Neuroimaging** SUERYUN LEE, JIMIN DAVID SHIN, CHRISTINE CHO, CRG(Choice Research Group) — Magnetic Resonance Image is one of the most widely used technologies to diagnose and study various diseases. Coils placed in the MRI machine detect waves that are released from hydrogen atoms in the particular section of the body. In this paper, image-processing routines were developed to analyze the frequency information and corresponding images created using Fourier transformation. Changing different variables in low pass filters could change the function produced over the image domain. As an application, MRI images of a brain affected with Alzheimer's disease were analyzed to observe the changes in data. A different k-space and corresponding histogram were obtained in brains of different stages of Alzheimers Disease. The k-space was constructed from the MRI image of the human brain using the MATLAB software. Different proposed filters were applied on the full K-space in order to find a most efficient filter, which can be used to produce best MRI image. Three different images were used to figure out the patterns of the histogram of the brain images affected by the disease.

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Date submitted: 22 Oct 2015

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