Project 6:

The project must prepared in an orderly and professional manner.

1. Utilize the matlab function phantom to create 512×512 phantom, i.e. the Modified Shepp-Logan phantom.

2. Utilize the matlab function radon to create the projections, or sinogram, of the Shepp-Logan phantom created above. Can you see the sinusoidal tracts of the major density areas. If not perhaps examine the Shepp-Logan phantom in its modified state.

3. Utilize the matlab function iradon to create a reconstruction from the above sinograms. Try different numbers of angles, and different numbers of line integrals. How many do you think are necessary of each.

4. Use the matlab function as in Problem 3, and compare the choices of filters which are provided by matlab. Perhaps design one of your own?

5. **Limited Angle Tomography** Try only utilizing a limited angular range of the sinograms.... i.e. start with only 45 degrees of projection data, then 90 degrees, and progress to 180 degrees. This should give you an idea of that the reconstruction algorithms are doing.

6. **Localized Tomography** Utilize only the central line integrals from the sinogram and compare against utilizing all of the sinogram, as in Figure **??**. How large to you have to make the "kept" central portion of sinogram in order to get a good image.