HW2

1. An apparent focal spot of 1 mm is projected from an X-ray tube. The true focal spot is 5 mm. What is the target angle? Why is the heel effect greater in an X-ray beam from a target with a small target angle? Use a diagram to illustrate.

2. A square object of side-length 20 cm is centered about the origin of rotation of a CT scanner, and has a homogeneous attenuation coefficient of 10 m^{-1}. Use Matlab to simulate the *intensity data* (as a function of projection angle) that would be obtained if the object were imaged in parallel beam mode, with an incident X-ray intensity of 1.0. Hand in your Matlab code or command sequence, along with figures showing the object and its sinogram, with an indexed color/gray scale bar.