465 Computer Lab 1, 2015, due Monday October 14th

An amorphous carbon film can be simulated (in the weak phase object approximation) by a pure noise object, i.e. 1+(r) where (r) is noise in some range, for instance 0.1 to -0.1. The parameters for the H9000 are Cs=0.9mm, focal spread of 8nm (Gaussian full width) and a convergence of about 0.5 mRad. A small particle can also be simulated using linear imaging theory as cosine fringes in a particular region.

Within SEMPER, there are three library programs setup to perform such simulations:

Lib Carbon (Amorphous carbon)

Lib Particle (Linear particle)

Lib CParticle (Linear particle on carbon)

Using these programs, run various simulations to model:

a) The effect of astigmatism and beam tilt on images

b) The effect of amorphous background on the visibility of a particle.

Printout your results and explain them, qualitatively.