MS2040\_01 Introduction to crystal structures and diffraction theories

Homework #4 Due: 11/13 after class

You are encouraged to organize a study group to solve the problem set.

1. Derive the intensity of diffracted beam for a set of double-slit shown below, and plot the result for the cases of (a) *a* = 2*b* and *c* = 2*a* and (b) *a* = 4*b* and *c* = 4*a*.



Where *D* >> *a*, *c* > *b*; *D* is the height of a slit; *a* is the adjacent spacing within the double-slit; *b* is the width of a slit; c is the spacing between double-slits.

Please use Huygens-Fresnel principle to start with.

2. Follow the above problem! If we extend the double-slit to *N* sets, i.e. there are *N* set of double-slit each spaced by *c*. Derive the intensity of diffracted beam for this case!