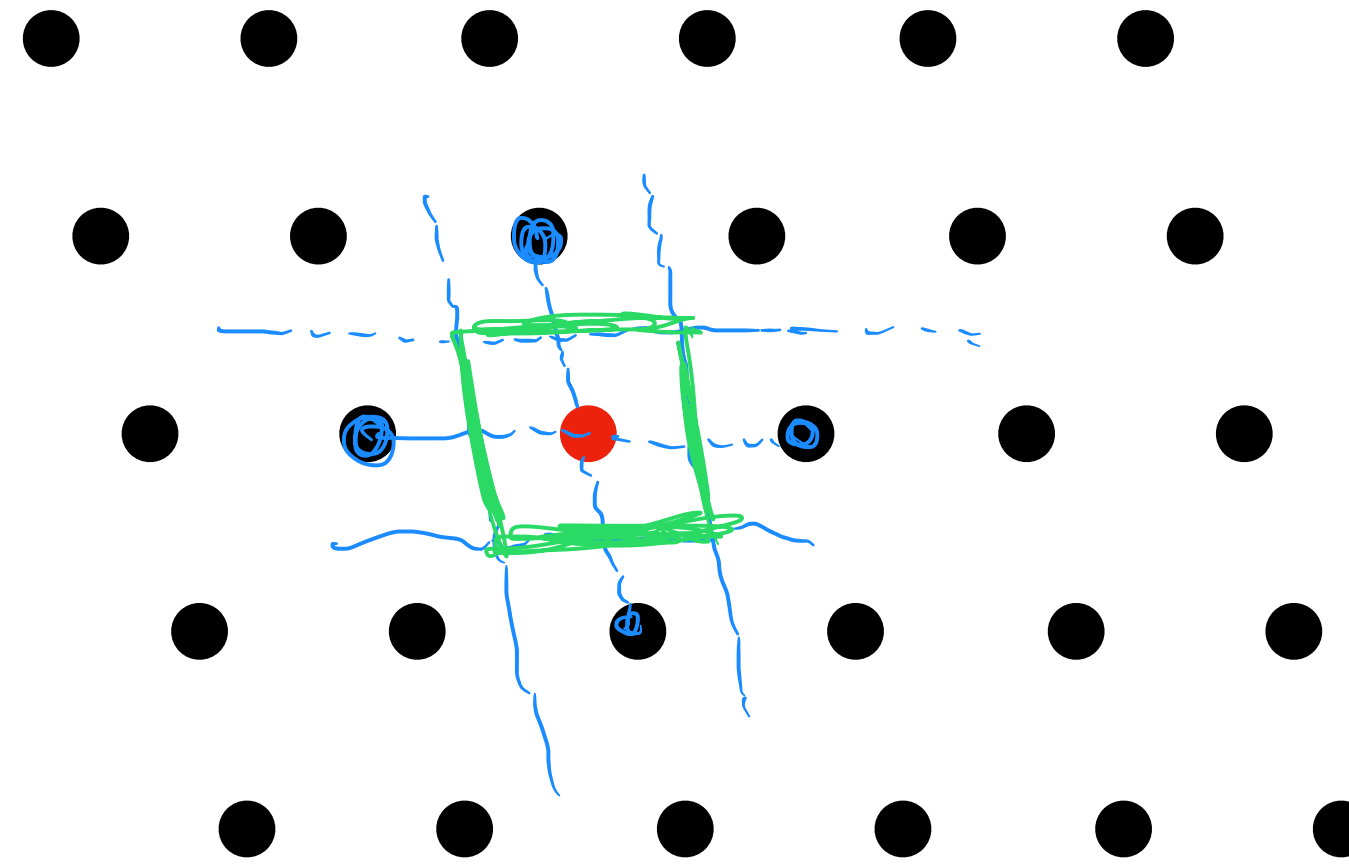


1. Draw the Brillouin zone of the reciprocal lattice shown below



Region enclosed
in green is the
1st B.Z.

2. BaTiO₃ has a primitive cubic lattice and basis coordinates

Ba [0,0,0]

Ti [1/2,1/2,1/2]

O [1/2, 1/2, 0], [1/2, 0, 1/2], [0, 1/2, 1/2]

Show that the X-ray structure factor for (00*l*) is given by:

$$S_{hkl} = f_{Ba} + (-1)^l f_{Ti} + [1 + 2(-1)^l] f_O$$