

NORTHERN ILLINOIS UNIVERSITY

PHYSICS DEPARTMENT

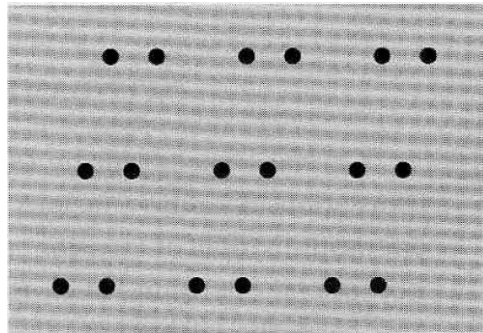
Physics 580 – Solid State Physics

Fall 2022

Problem Set #1

Problem Set Due: Tues., Aug. 30, 2022

Read Kittel: Chapter 1



1. The points in the figure above are identical atoms. Sketch on the figure
 - (a) a set of lattice points
 - (b) a choice of primitive axes
 - (c) a primitive cell based on your choice of primitive axes
 - (d) the basis of atoms associated with a lattice point
 - (e) the Wigner-Seitz primitive cell

2. **Tetrahedral angles.** The angles between the tetrahedral bonds of diamond are the same as the angles between the body diagonals of a cube as shown in Fig. 14 (6th edition) or Fig. 10 (8th edition). Use elementary vector analysis to find the value of the angle.