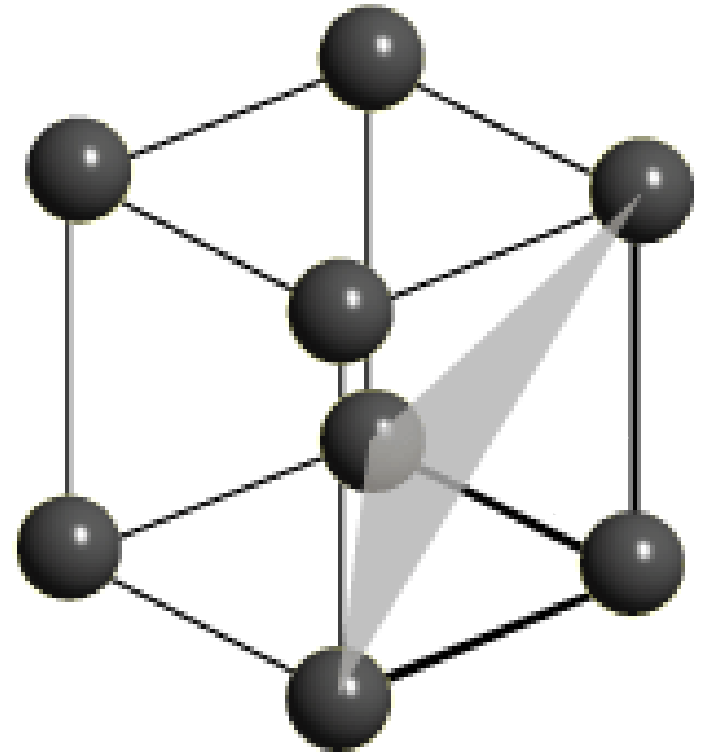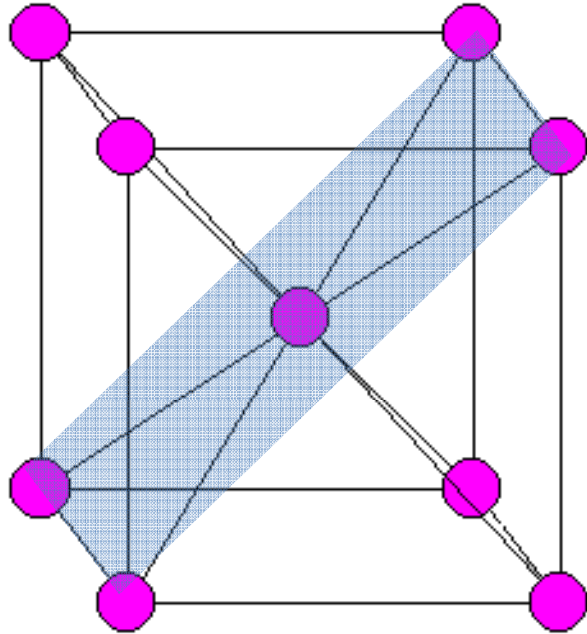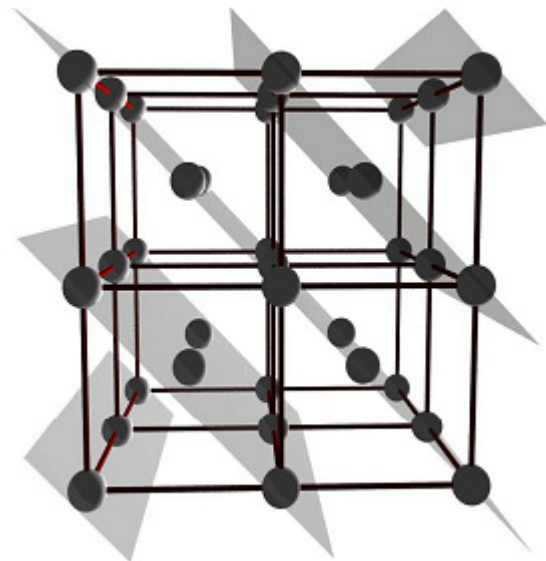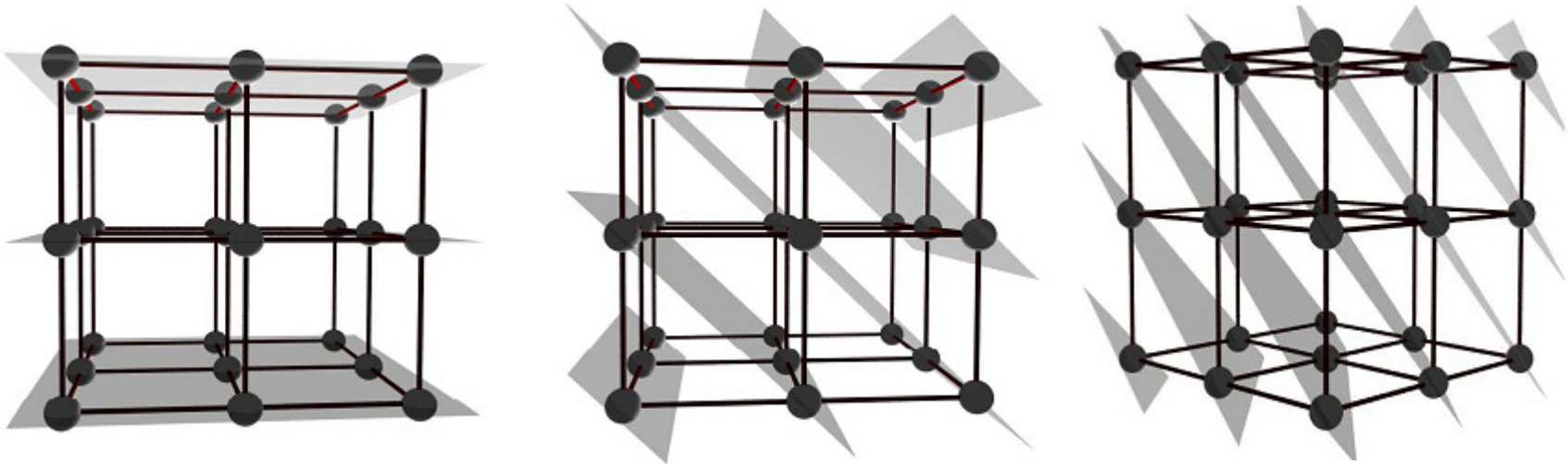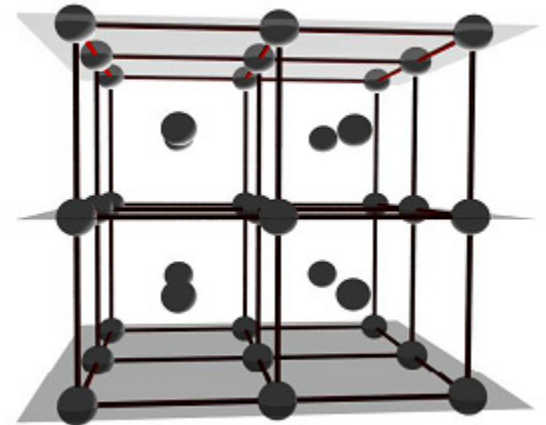Slides
Condensed Matter Physics
Lecture 11

Some Lattice Planes
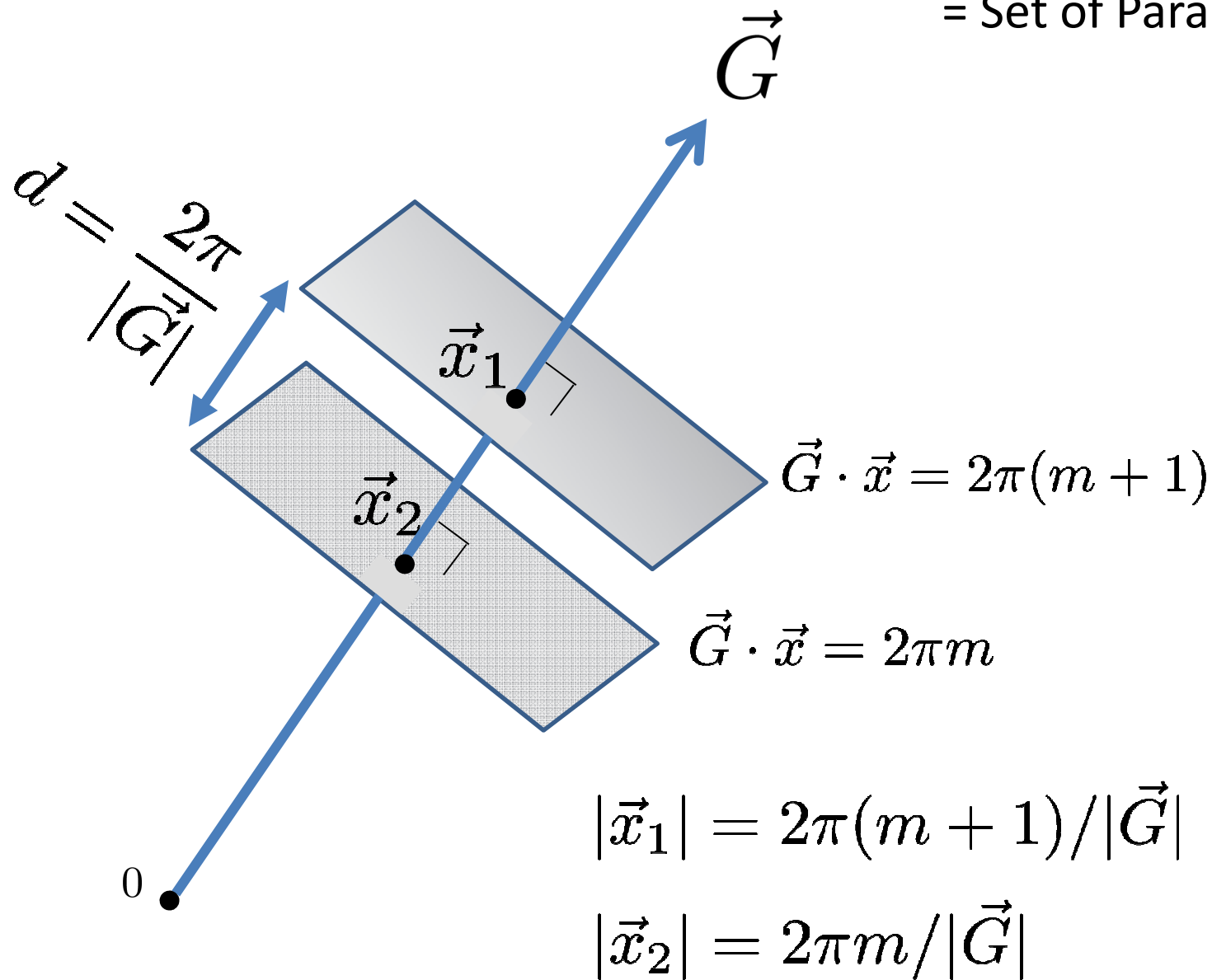
Some Families of Lattice Planes for Simple Cubic Lattice

Family of Lattice Planes for BCC Lattice

NOT a Family of Lattice Planes for BCC Lattice

Geometry of $e^{i\vec{G}\cdot\vec{x}} = 1$

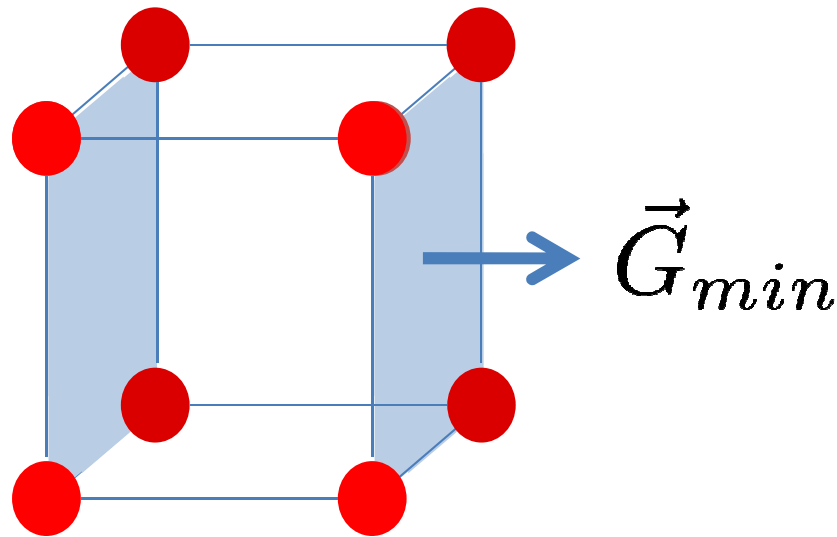= Set of Parallel Planes

$\vec{G}$

$d = \dfrac{2\pi}{|\vec{G}|}$

$\vec{x}_1$

$\vec{x}_2$

$\vec{G}\cdot\vec{x} = 2\pi(m+1)$

$\vec{G}\cdot\vec{x} = 2\pi m$

0

$|\vec{x}_1| = 2\pi(m+1)/|\vec{G}|$

$|\vec{x}_2| = 2\pi m/|\vec{G}|$

$$e^{i\vec{G}\cdot\vec{R}} = 1$$ assures all lattice points included in defined planes $e^{i\vec{G}\cdot\vec{x}} = 1$ but...

Only for $\vec{G}_{min}$ are all planes lattice planes.

$$d = \frac{2\pi}{|\vec{G}_{min}|}$$

$$\vec{G}_{min}$$

$$d = \frac{2\pi}{2|\vec{G}_{min}|}$$

$$\vec{G} = 2\vec{G}_{min}$$