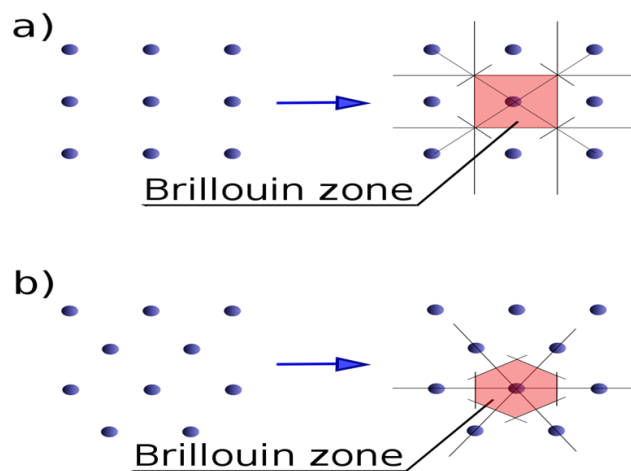


Brillouin Zone

Set of points in k -space that can be reached from the origin without crossing any Bragg plane.

Or

First **Brillouin zone** is a uniquely defined primitive cell in reciprocal space.



*The reciprocal lattices (dots) and corresponding first Brillouin zones of:
(a) square lattice and (b) hexagonal lattice.*

Or

Brillouin zones in terms of E-K diagram (Momentum space)

Brillouin zones are nothing but allowed energy regions in momentum space for electrons present in periodic crystals. The allowed energy regions (Brillouin zones) have certain boundaries in momentum space.

The electrons present in periodic crystals are commonly referred as 'Bloch electrons or Bloch waves'. Bloch waves behave as traveling like waves within the Brillouin zone and at the boundaries of Brillouin zone the group velocity of the Bloch waves tends to zero. Such a change in the behavior of Bloch waves from traveling to

standing wave formation, results in origin of energy gap at the boundaries. This is commonly called Bragg diffraction of Bloch electrons at the zone. Brillouin zones play important role in understanding the electronic properties of crystals.

