

Band Structure Models

Apparatus

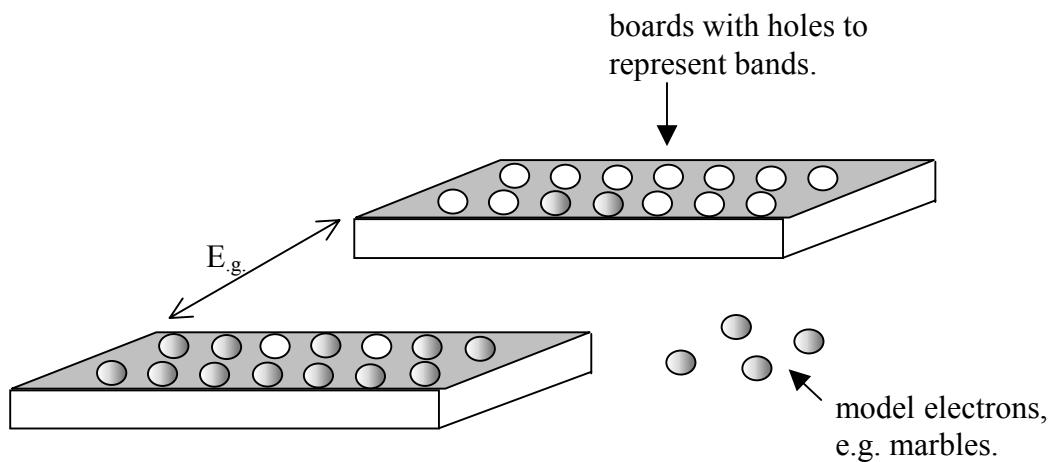
“egg carton” like containers with indentations for marbles or balls (electrons), divided into bands and spaced appropriately for metals, semiconductors etc, model electrons, “eggs”, e.g. marbles, to fill the holes in the containers

Action

The students examine the models and explore how electrons and holes can act as charge carriers.

The Physics

The “egg cartons” represent energy bands, which can be full, partly full or empty of electrons, depending on the material being represented. More or less electrons can be added to represent n and p type semiconductors.



Accompanying sheet:

Band Structure Models

Examine the band structure models.

How can you make n or p type semiconductors?

How can a “hole” act as a charge carrier?