

# Summary

## Atomic configurations

- States in atoms with many electrons
- Filled according to the Pauli exclusion principle

## Molecular wave functions: origins of covalent bonds

- Example:  $\text{H} + \text{H} \rightarrow \text{H}_2$

## Electron energy bands in crystals

- Bands and band gaps are properties of waves in periodic systems.
  - There is a continuous range of energies for “allowed” states of an electron in a crystal.
  - A Band Gap is a range of energies where there are no allowed states
- Bands are filled according to the Pauli exclusion principle