

## Session 2

### 1. The Nucleus (Nuclear Composition)

*[Harms, Chapter 2, pp. 15-22]*

*[Chart of the Isotopes]*

- nuclear structure - protons & neutrons
- definition of A&Z *[Unlocking, Appendix A, pp. 257-260]*
- isotopes
- size of the nucleus & density of nuclear matter
- binding energy
- curve of mass binding (binding energy per nucleon)
- chart of the nuclides & how to use it

### 2. Nuclear Emissions

*[Harms, Chapter 2, pp. 22-27]*

*[Unlocking, Appendix A, pp. 257-260]*

- neutron, alpha, beta, gamma emissions
- (N,Z) graph & example reactions plotted
  - alpha
  - beta + and beta -
  - neutron emission
  - proton emission
  - K electron capture
- Neutron energy levels in nucleus
  - comparison with electrons in atoms
  - metastable isotopes