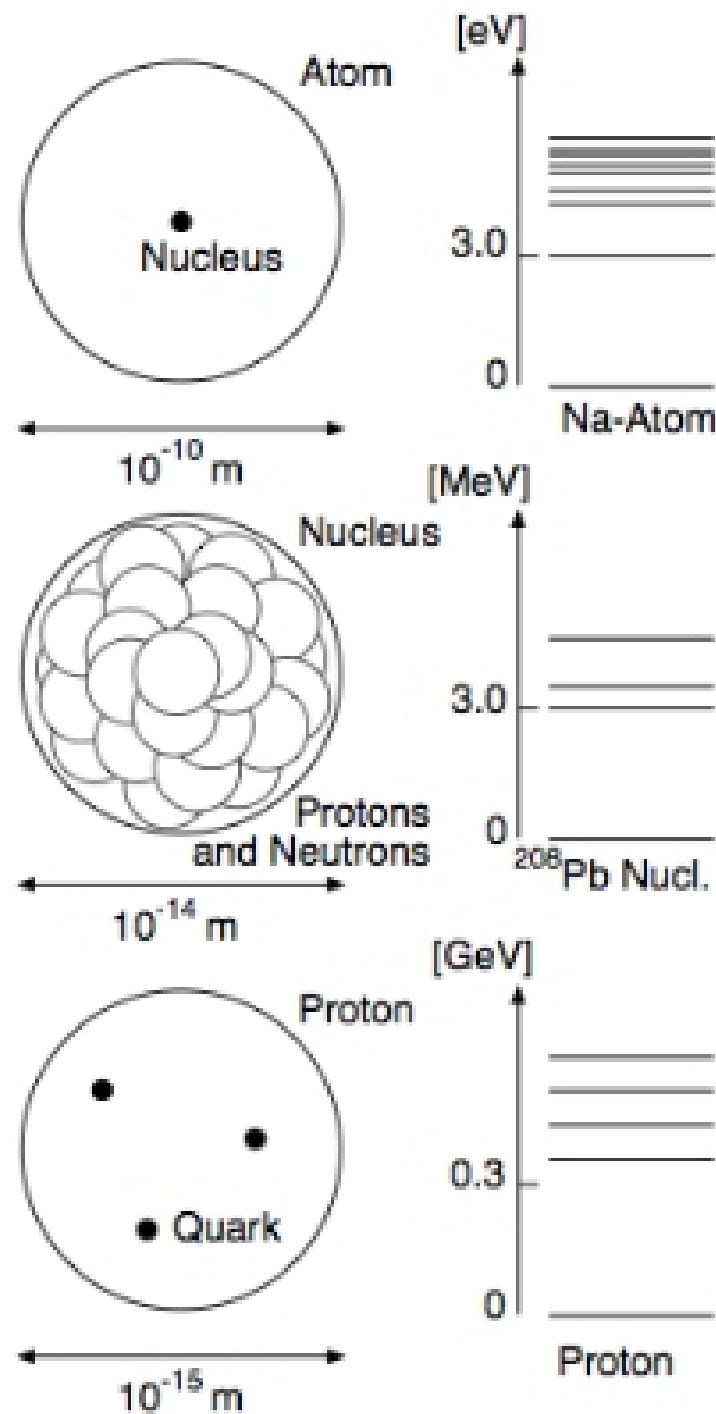


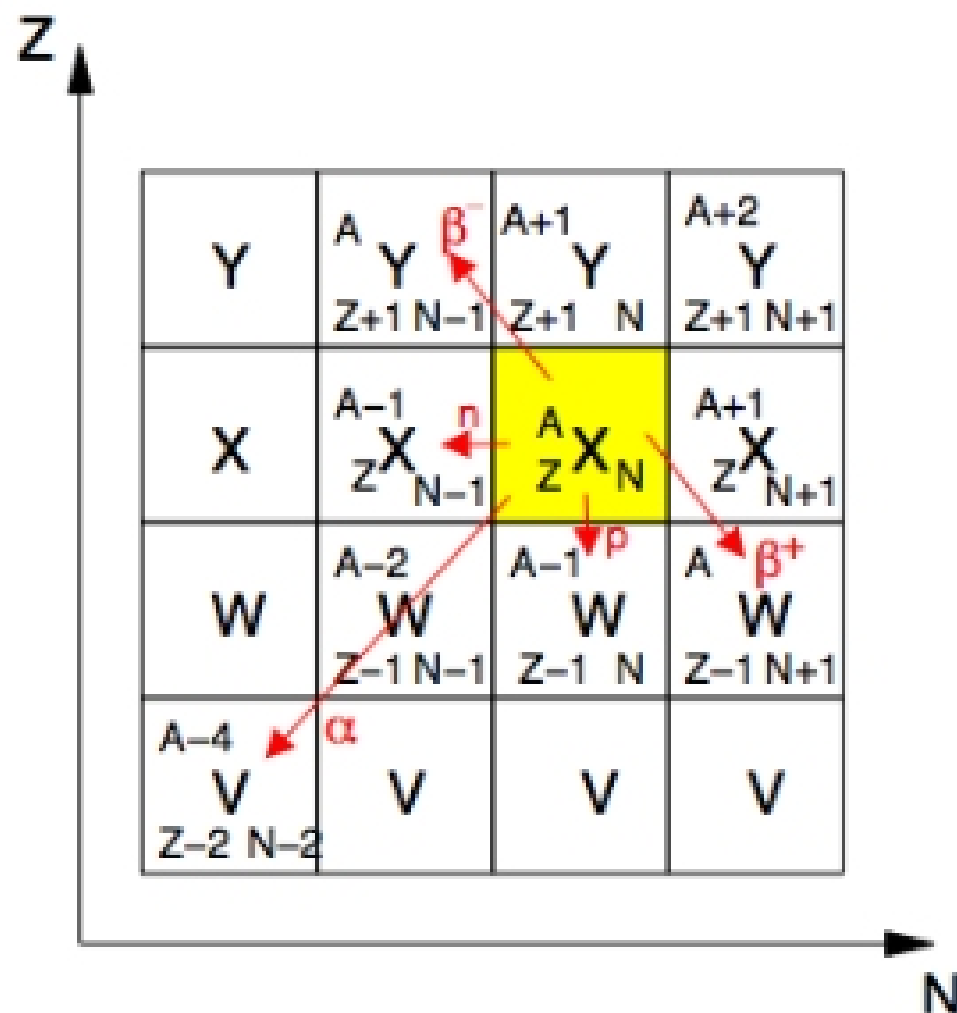
Nuclear Properties

The Nucleus



- Atoms consist of a **nucleus** and an **electron shell**.
- A nucleus consists of **nucleons**: **protons** and **neutrons**. As the mass of a nucleon is about 2000 times the mass of an electron the nucleus carries practically all the mass of an atom.
- A nucleon consists of 3 **quarks** (and **gluons**).
- 1 fm (femtometer, Fermi) = 10^{-15} m is the typical length scale of nuclear physics
- 1 MeV (Mega-electron volt) = $1.602 \cdot 10^{-13}$ J is the typical energy scale of nuclear physics

Nuclid Chart



- **nuclids** can be put onto a **chart**, not unlike a periodic table for nuclear physics
- typically the chart plots **Z vs N**
- the different **radioactive decays** can easily be connected with **movement in the chart**, e.g. α -decay corresponds to two-left, two-down.
- this allows to visualise entire **decay chains** in an effective fashion
- it also allows to visualise other properties, e.g. lifetime