

Quiz 1

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- 1.1) Give values and units for α , $\hbar c$, and kT .
- 1.2) Name and formulate the five terms contributing to the binding energy in the Weizäcker (or quantum liquid drop) model.
- 1.3) Calculate the maximum range of the W^+ induced weak interaction. Hint: $m_W = 80 \text{ GeV}/c^2$.
- 1.4) The fact that the strong interaction cannot distinguish between neither protons and neutrons nor *up* and *down* quarks generates which symmetry?
- 1.5) How is the activity of a radioactive sample defined?
- 1.6) Name all reaction products of the free neutron decay?
- 1.7) How many stable $A = 149$ isobars exist?
- 1.8) Which interaction can turn an *up* into a *down* quark or in other words can flip the isospin?
- 1.9) What is the I_z value of ${}^{235}_{92}\text{U}_{143}$?
- 1.10) What is a $M1$ transition and is it more or less likely to happen than a $E2$ transition?