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The proton-neutron mass difference and the stability of ordinary matter

physikalisches

Most of the mass of the visible universe is a consequence of the dynamics of the strong nuclear force. Through a steady progress in the understanding of this nonperturbative phenomenon over the last decade, we have gained increasing insight into the details of this mechanism. The numerical solution of the theories of the strong nuclear force, quantum chromodynamics (QCD), and the electromagnetic force (QED) have recently provided us with a quantitative understanding of even the permil level difference of the masses of protons and neutrons, which is fundamental for the existence and stability of the universe as we know it. In this talk, I will present these calculations and discuss their implications on the question of how finely tuned our universe really is.

Mo. 12.10.15
16:00 Uhr
Ort: H34

