

High Energy Physics - Phenomenology

Sea quark contents of octet baryons

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The flavor asymmetry of the nucleon sea, i.e., the excess of $d\bar{d}$ quark-antiquark pairs over $u\bar{u}$ ones in the proton can be explained by several different models; therefore, it is a challenge to discriminate these models from each other. We examine in this Letter three models: the balance model, the meson cloud model, and the chiral quark model, and we show that these models give quite different predictions on the sea quark contents of other octet baryons. New experiments aimed at measuring the flavor contents of other octet baryons are needed for a more profound understanding of the non-perturbative properties of quantum chromodynamics (QCD).

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