

High Energy Physics - Phenomenology

Light Scalar Mesons as Manifestation of Spontaneously Broken Chiral Symmetry

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Attention is paid to the production mechanisms of light scalars that reveal their nature. We reveal the chiral shielding of the $\sigma(600)$ meson. We show that the kaon loop mechanism of the ϕ radiative decays, ratified by experiment, points to the four-quark nature of light scalars. We show also that the light scalars are produced in the two photon collisions via four-quark transitions in contrast to the classic P wave tensor $q\bar{q}$ mesons that are produced via two-quark transitions $\gamma\gamma \rightarrow q\bar{q}$. The history of spontaneous breaking of symmetry in quantum physics is discussed in Appendix.

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