

Strange Meson Radiative Capture on the Proton in Low Energy QCD Lagrangian

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Abstract: Based on our low energy QCD Lagrangian description of strange meson photoproduction off the proton and the crossing symmetry, the strange meson radiative capture on the proton, $K^+p \rightarrow \gamma + \Lambda$, is investigated in the $[SU_{SF}(6) \otimes O(3)]_{sym.} \otimes SU_c(3)$ quark model of baryon structure with the same input parameter, the only strong coupling constant α_M , as that in the strange meson photoproduction off the proton $\gamma + p \rightarrow K^+ + \Lambda$, a crossing channel of the capture reaction. A good agreement on the branching ratio between the predictions and data is obtained successfully. This excellent fit indicates that our low energy QCD Lagrangian theory with only one free parameter is an advanced and unified description of strange meson photoproduction and its associated radiative capture.

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Key words: low energy QCD, quarks and gluons, K^+ photoproduction, K^- radiative capture

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