

## Strange Meson Photo-production and Its Associated Radiative Capture on Proton in Low-Energy QCD Lagrangian

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(Received: 2005-10-17; Revised: )

**Abstract:** Based on the low energy QCD Lagrangian theory and the crossing symmetry relation, strange meson photo-production and its associated radiative capture on the proton are investigated in the  $[SU_{\text{SF}}(6) \otimes O(3)]_{\text{sym.}} \otimes SU_c(3)$  quark model of baryon structure with only one same input parameter, the only strong coupling constant  $\alpha_{\text{M}}$ . Calculations for the cross sections, p-polarization of  $\gamma + p \rightarrow K^+ + \Lambda$  reaction and the branching ratios for  $K^-$  radiative capture of  $K^- + p \rightarrow \gamma + Y$  with  $Y = \Lambda, \Sigma^0$  are performed. Good agreements to data are obtained and the results show that, compared to traditional phenomenological models, the low energy QCD Lagrangian theory provides a successful, unified description of the strange meson photo-production and its associated radiative capture.

PACS: 12.38.Lg, 13.60.Le, 24.85.+p, 25.20.-x

**Key words:** low-energy QCD Lagrangian, quarks and gluons, quark structure of baryon, strange meson photo-production,  $K^-$  meson radiative capture

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