Strange meson photo-and electro-production off the nucleon in low energy QCD Lagrangian

Zhou Li-juan and Wei-xing Ma

Department of Information and Computing Sciences, Guangxi university of Technology, Liu Zhou, 545006, P. R. China

We develop a general framework to study strange meson photo- and electro-production off the nucleon in QCD. The s- and u- channel resonance contributions are expressed in terms of the CGLN amplitude in the quark model of baryon structure, Calculations are performed for the Kao photo-production processes, , and The phase of different terms in the T-matrice is naturally determined by the wave function. Our theory reproduces existing data quite well , and the initial results show that QCD provides an advanced and unified description of the reaction mechanism with only one free parameter, strong coupling constant . In contract with traditional phenomenological models, a successful and unified description is obtained.We are now applying the low energy QCD Lagrangian theory to vector meson photo-production off the proton.

References

[1] Chew G.F.,Goldberger M.L., Low F.E. and Nambu Y.,Relativistic dispersion relation approach to phot! on meson production, Phys. Rev. 1957,106, 1345-1355

[2] Zhou Li-juan, Ma Wei-xing and peng Guang Xiong, Strange meson photoproduction off the proton in low energy QCD Lagrangian, Science in China, A31 (2001) 1017-1025