

ϕ photoproduction near the threshold energy

HYUN-CHUL KIM^(a), HUI-YOUNG RYU^(b,d), ALEXANDER TITOV^(c,d), ATSUSHI HOSAKA^(c)

^(a) Department of Physics, Inha University

^(b) Korea Institute of Science and Technology Information (KISTI)

^(c) Research Center for Nuclear Physics, Osaka University

^(d) Bogoliubov Laboratory of Theoretical Physics, JINR

In the present talk, we review a recent work on ϕ photoproduction [1], based on a coupled-channel formalism. We take into account several hadronic rescattering contributions, in addition to the Pomeron and pseudoscalar meson-exchange. The hadronic rescattering effects can explain the recent experimental data in the vicinity of the threshold. In particular, the bump-like structure at the photon energy $E_\gamma \approx 2.3$ GeV is described very well by the $K\Lambda(1520)$ rescattering amplitude in the intermediate state. We discuss also the contributions of hadronic rescattering diagrams to the observed spin-density matrix elements near the threshold region.

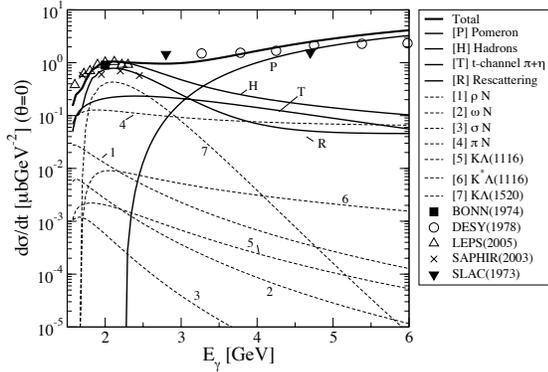


Figure 1: Differential cross section as a function of the photon energy E_γ in a log scale. The thick solid curve depicts the result with all contributions included. The solid curves with the symbols P , T , R and H represent the Pomeron contribution, those of π - and η -exchanges, those of all the box diagrams, and the total contribution of hadronic diagrams ($T + R$), respectively. The dashed curves with numbers in order denote the effects of the seven rescattering diagrams separately.

[1] H. -Y. Ryu, A. I. Titov, A. Hosaka and H. -Ch. Kim, arXiv:1212.6075 [hep-ph].

E-mail:

hchkim@inha.ac.kr