

# Properties of $\Xi$ hyperons and $\Xi$ photoproduction process

Yongseok Oh<sup>(a)</sup>

<sup>(a)</sup> Department of Physics, Kyungpook National University, Daegu 702-701, Korea

In spite of the early efforts for studying  $\Xi$  resonances, we do not have enough information on the properties of these resonances. The number of observed resonances is smaller than quark model predictions, and the predicted mass spectrum show serious model-dependence. Furthermore, the spin-parity quantum numbers are not known for most observed resonances and we do not know such quantum numbers even for the ground state  $\Xi$ . Our understanding on the production mechanisms of  $\Xi$  photoproduction is far from complete. Recently, however, the interests in this field is increasing, and the cascade physics programs are planned at Jefferson Lab. and at J-PARC. In this talk, we review the issue in the  $\Xi$  spectrum [1] and present a model for  $\Xi$  photoproduction [2] which emphasizes the role of high-spin hyperon resonances. Finally, we will discuss a possible model-independent way to identify the parity of  $\Xi$  hyperons [3].

[1] Y. Oh, Phys. Rev. D **75**, 074002 (2007).

[2] K. Nakayama, Y. Oh, and H. Haberzettl, Phys. Rev. C **74**, 035205 (2006); J. K. S. Man, Y. Oh, and K. Nakayama, Phys. Rev. C **83**, 055201 (2011).

[3] K. Nakayama, Y. Oh, and H. Haberzettl, arXiv:1201.5598 (2012)

E-mail:

yohphy@knu.ac.kr