Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

Dynamical coupled-channels study of hyperon resonances via anti-kaon-nucleon reactions[1] HIROYUKI KAMANO, RCNP, Osaka University, SATOSHI NAKAMURA, Department of Physics, Osaka University, T.-S. HARRY LEE, Physics Division, Argonne National Laboratory, TORU SATO, Department of Physics, Osaka University — We develop a dynamical coupled-channels model of K^-p reactions for the purpose of establishing mass spectrum of hyperon resonances and determining the partial wave amplitudes of the elementary anti-kaon-nucleon reactions. The channel space of the model is spanned by the two-body $\bar{K}N$, $\pi\Sigma$, $\pi\Lambda$, and $K\Xi$ channels as well as the three-body $\pi\pi\Lambda$ and $\pi\bar{K}N$ channels that have the quasi-two-body $\pi\Sigma^*$ and $\bar{K}^*N$ components. The model parameters are fixed by a comprehensive analysis of the available unpolarized and polarized observables of $K^-p \to \bar{K}N, \pi\Sigma, \pi\Lambda, K\Xi$ reactions from the threshold up to $\sqrt{s} = 2.1$ GeV. In this talk, we report the current status of the comprehensive multichannel analysis of K^-p reactions and the extracted parameters (pole masses and coupling strengths defined by the residues of the scattering amplitudes at the pole) of hyperon resonances. We also discuss about the role of the reaction dynamics for understanding various properties of hyperon resonances.

[1]This work was supported by the JSPS KAKENHI Grant No. 25800149 (H.K.) and No. 24540273 (T.S.), and by the U.S. Department of Energy, Office of Nuclear Physics Division, under Contract No. DE-AC02-06CH11357.

Hiroyuki Kamano
RCNP, Osaka University

Date submitted: 16 Jun 2014 Electronic form version 1.4