

# A New Version of One-Boson-Exchange Baryon-Baryon Potential Model

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A new version of one-boson-exchange potential model of baryon-baryon interactions is proposed and its properties in  $S(\text{strangeness}) = -1$  and  $S = -2$  sectors are discussed, in comparison with the experimental data. In the short-range part of the potential, we introduce the flavor  $SU(3)$ -symmetric potentials simulating the result of lattice QCD calculations[1]. In the long-range part, we assume the one-boson-exchange potentials based on the  $SU(3)$ -symmetric coupling constants and mesons with physical masses. Our model includes the retardation effect in the meson exchange. In our old versions[2,3], our potential model predicted the repulsive  $\Xi$  single-particle potential in the symmetric nuclear matter. Recently,  $\Xi$ -hypernucleus  ${}_{\Xi}^{15}\text{C}$  (Kiso event) was observed in the emulsion experiment and the  $B_{\Xi}$  was estimated to be  $4.38 \pm 0.25\text{MeV}$ [4]. This requires the attractive  $\Xi$  interaction with nucleus. In the new version, we determined the parameters in the model so as to reproduce consistently the  $NN$ ,  $YN$  scattering data and hypernuclear data including this value. In addition, we propose a Gaussian-parametrized potential reproducing precisely our new potential.

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[4] K.Nakazawa, et al. JPS meeting, HAW2014, 2WF7 (2014), PTEP (2015)(to be published).