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Mean Field and Beyond Mean Field Calculations of Hypernuclei for Study of Electroproduction

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We present two methods, the Nucleon-Lambda Tamm Dancoff Approximation (NL TDA) and the Equation of Motion Phonon Method (EMPM) suitable for calculating hypernuclear energy spectra and structure. These methods are applicable for hypernuclei of wide range of masses with one Lambda particle replacing one nucleon in an even-even nuclear cores. Using an effective Lambda-nucleon potential both methods were applied to calculate the energy spectrum of ${}^{12}_{\Lambda}$B and also one body density matrix elements (OBDME). The OBDME were applied to calculate the cross section in electroproduction of ${}^{12}_{\Lambda}$B. We obtained reasonable agreement with the previous theoretical studies and the experimental data. This allows us to provide theoretical prediction (by applying the same methods and Lambda-nucleon potentials) of the cross section in electroproduction of ${}^{40}_{\Lambda}$K and ${}^{48}_{\Lambda}$K.

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