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Test of the slow variable discretization method in the adiabatic hyperspherical treatment of the $p + n + n$ system[1] KEVIN DAILY, CHRIS GREENE, Department of Physics, Purdue University, West Lafayette, Indiana 47907, USA, ALEJANDRO KIEVSKY, Istituto Nazionale di Fisica Nucleare, Largo Pontecorvo 3, 56100 Pisa, Italy — We consider the $p + n + n$ system using the Argonne v_{18} plus the Urbana IX three-nucleon potential in the adiabatic hyperspherical description. Considering the $J = 1/2+$ state, we solve for bound states and scattering properties in a two-step method. First, we use a hyperspherical harmonic expansion to calculate the adiabatic potential curves as a function of the hyperradius R. Second, we solve the remaining set of coupled equations in R using Gauss-Lobatto basis function in a discrete variable representation together with a slow variable discretization of R [O. I. Tolstikhin, S. Watanabe, and M. Matsuzawa, J. Phys. B **29** L389 (1996)]. The resulting bound state energies not only agree well with benchmark calculations, but also show favorable convergence properties in comparison with the direct calculation of the coupling matrices. Two- and three-body scattering properties of the system are also calculated and extension to other scattering states and to the four-nucleon problem are discussed.

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