

EQUIVALENCE OF THE REPRESENTATION
WITH THE USE OF THE ISOSPIN FORMALISM
AND THE REPRESENTATION WITHOUT ISOSPIN
FOR A THREE-NUCLEON SYSTEM

I.S. Dotsenko, I.V. Simenog¹

Taras Shevchenko Kyiv National University
(6, Academician Glushkov Prosp., Kyiv 03127, Ukraine),

¹M.M. Bogolyubov Institute for Theoretical Physics,
Nat. Acad. Sci. of Ukraine
(14b, Metrolohichna Str., Kyiv 03143, Ukraine)

S u m m a r y

For the systems of three nucleons, $(2p,n)$ and $(2n,p)$, in the doublet state in spin, it is established that, respectively, from six and four spatial components of wave functions in the standard form with the use of the isospin formalism, only two components are independent. The formulas for the construction of the full antisymmetric wave functions in terms of two independent components are obtained. The systems of two equations for independent spatial components in the doublet state of nuclei ${}^3\text{He}$ and ${}^3\text{H}$ and one equation for the quartet state are formulated. It is shown that the physical characteristics, which are calculated in the representation with the use of the isospin formalism and in the representation without isospin, coincide. The perspective of the new approach for the execution of precise studies of few-nucleon systems is discussed.