ONE-NUCLEON SPECTROSCOPY OF LIGHT NUCLEI

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The best promising possibilities and shortcomings of the classic many-particle shell model and modern potential cluster models are under discussion. The new and revaluated one-nucleon spectroscopic characteristics of the light 1*p*-shell nuclei are presented. The calculations of the nucleonic partial high excited "allowed" transitions within the many-particle shell-model are shown for the nuclei with c A = 7, 9, 11, 13 и 15 and isospin T = 3/2 as well as the "forbidden" transitions are also implemented. One-nucleon spectroscopic factors have been calculated in the three-particle multicluster models of the following nuclei ^{6}Li $\{\alpha np\}$, ^{8}Li $\{\alpha tn\}$ and ^{9}Be $\{\alpha\alpha n\}$. For the isobar analogous ^{7}Li-^{7}Be within the potential cluster approach αt and αt the proton S_p and neutron S_n spectroscopic factors are given as for the ground state and for the low excited states corresponding to the ^{6}Li-^{6}He-^{6}Be. retardation nuclei. According to this approach the total, differential and polarized characteristics for the photonuclear processes $^{7}\mathrm{Li}(\gamma, n_0)^{6}\mathrm{Li}$, $^{6}\mathrm{He}(p,\gamma_{0+1})^{7}\mathrm{Li}$, $^{7}\mathrm{Li}(\gamma, p_0)^{6}\mathrm{He}$ and $^{9}\mathrm{Be}(\gamma, p_{0+1})^{8}\mathrm{Li}$ are presented.