SHORT-RANGE NN CORRELATIONS IN THE REACTION $^{12}C + p \rightarrow {}^{10}A + pp + N$

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Nucleon pairs in the region of the repulsive core play an important role in structure of atomic nuclei. Properties of such pairs determined by nucleon-nucleon interaction at short distances between nucleons ($R_{NN} \leq 0.5$ fm) are not yet well established and studied experimentally in many nuclear centers using electron and proton beams. A principal new method was suggested at BM@N in JINR [1] where an inverse kinematics of the reaction $^{12}C + p \rightarrow {}^{10}A + pp + N$ is used with a beam of the ^{12}C nuclei at energy of 4 GeV/nucleon interacting with the hydrogen target. The detector system allows to detect the scattered proton, the knock-outed from the short-range *NN* pair nucleon, the residual nucleus ^{10}B or ^{10}Be and the recoil nucleon *N*.

We start here to develop a mathematical formalism for calculation of the differential cross sections of these reactions. Spectroscopic amplitudes for *NN*-pairs in the ground state of the ^{12}C nucleus are calculated using parentage coefficients for translation-invariant shell model [2] and the results of numerical calculations with accounting for mixing configurations [3]. Only ground states of internal motion in the *NN*-pairs corresponding to harmonic oscillator quantum numbers $n = 0$, $l = 0$ are taken into account with the spin-isospin states ST=01 and 10. The states of the residual nucleus with the s^4p^6 configuration are taken into account, whereas the states with holes in the *s*-shell are neglected because transitions to these states are suppressed by absorption of in-coming and out-coming waves. The matrix element for transition $p + <NN> \rightarrow p + N + N$ requires to account for relativistic effects and re-scatterings in the initial and final states. These effects are considered in the line of the approach developed in Ref. [4] for the reaction $pd \rightarrow (pp)(^1S0) + n$.

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