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Ground State Multiplet in $N \sim Z$ nuclei

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Pairing correlations in even-even and odd-odd $N \sim Z$ nuclei are studied within the approximation of modified surface delta interaction (MSDI). Mass relations are used to determine the value of pairing energy of identical nucleons in even-even isotopes. This value is treated as an input parameter for MSDI approximation, which can be applied in order to reproduce the ground state multiplet (GSM) in the low-energy part of nuclear spectra. Pairing of neutrons and protons in odd-odd nuclei leads to formation of GSM composed of isovector ($T = 1$) and isoscalar ($T = 0$) parts. Through comparison of neighboring even-even and odd-odd isobars, the isovector part of GSM is extracted in experimental spectra of odd-odd isotopes and used to check the predictions given by the MSDI model. An attempt on reproduction of the isoscalar states is made.

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