The XXI International Scientific Conference of Young Scientists and Specialists (AYSS-2017)



Contribution ID: 248

Type: Oral

Nucleon pairing manifestation in systematics of low-lying spectra in isotopes near 208Pb

Systematics of excited states in heavy even-even and even-odd isotopes near 208Pb is considered. For Ground State Multiplet calculations the delta- approximation for nucleon pairing between nucleons in j=9/2 state [1] is used.

Multiplet splitting corresponds to pairing energy, which can be defined from nuclear masses [2]. So considered model allows one to calculate low-lying excitations without any additional parameters. Excited states for isotopes with more than two valence nucleons are obtained using seniority model [3] and coefficients of fractional parentage from [4]. Multiplets with seniority v = 2, 3, 4 have been clearly marked in the considered nuclei. Results of calculations are in a quite agreement with experimental data as for stable as for exotic nuclei. The simplicity of the model and the absence of fitting parameters makes it useful to apply it to the wide systematics of the nuclei and to reveal the nature of the excited states.

[1] Talmi I. Simple Models of Complex Nuclei. Harwood Ac. Publ. Chur. 1993.

- [2] Ishkhanov B.S., Stepanov M.E., Tretyakova T.Yu. Moscow University Physics Bulletin. 2014. 69. P. 1.
- [3] Ring P., Schuck P. The nuclear many-body problem. Springer. 2004.

[4] Bayman B.F., Lande A. Nucl. Phys. 1966. 77. P. 1.

Primary author: Ms IMASHEVA, Liliya (Lomonosov Moscow State University)

Co-authors: Prof. ISHKHANOV, Boris (Dep. Of Physics, Lomonosov Moscow State University); Dr STEPANOV, Mikhail (Dep. Of Physics, Lomonosov Moscow State University); Mr SIDOROV, Semyon (Moscow State University named after M.V. Lomonosov); Dr TRETYAKOVA, Tatyana (SINP MSU)

Presenter: Ms IMASHEVA, Liliya (Lomonosov Moscow State University)

Track Classification: Experimental Nuclear Physics