

TITLE OF THE ARTICLE

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This is a body of the abstract. It must consists of not more than 100 words. PACS (Particle and Astronomy Classification System) number (or several numbers), which is placed below, can be taken from Pis'ma v ZhETF, 1993, v.58, No7, and No9.

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1. INTRODUCTION

This is a body of the article, which describes the common requirements for submission of papers to the journal "Problems of Atomic Science and Technics", Series: "Nuclear Physics Investigations". 1. Authors must satisfy all requirements of <Rules for authors of journal "Problems of Atomic Science and Technics", series: "Nuclear Physics Investigations"> (see Ukrainian text).

2. The style of the article is given in this paper. Each author can prepare his article by the way of substitution of the proper text instead of this text. Proper text units can be preliminary prepared in the any text redactor in the file with expansion .txt. Author I.N. Petrov should prepare his own file with the name Petrov.tex .

2. TEXT OF THE PAPER

The file of the article has a format of *LATEX* – 2 ϵ with extension .tex. Complete description of the publishing system *LATEX* – 2 ϵ , one can find in the Russian book [1]. Here, at the same time, we showed how to cite on the literature.

3. FORMULAE

Example 1.

Short formula (designation) inside of the text: ...In order to obtain the basis functions, which will be convenient for description such bound states, we will consider the solution of the Dirac equation with model string potential $\vec{A} = 0$ and $V(\rho) = -Z|e|/\rho + C...$

Example 2.

Formula: ...Taking into account that potentials don't depend on time, one easily verifies the commutation relation

$$\left[\hat{H}, i\hbar \frac{\partial}{\partial t} \right] = 0, \quad (1)$$

and the corresponding constant of motion with eigenvalue E .

Example 3.

Large formula:...So the solutions of the Dirac equations characterized by the trivial time dependence, and one can write the stationary Dirac equations in the cylindrical coordinate system with the polar axes z directed along the atomic string:

$$\begin{aligned} -\frac{i}{\hbar c} (E - m_e c^2 - eV(\rho, \varphi, z)) \psi_1 + \frac{\partial \psi_3}{\partial z} + e^{-i\varphi} \left(\frac{\partial}{\partial \rho} - \frac{i}{\rho} \frac{\partial}{\partial \varphi} \right) \psi_4 &= 0, \\ -\frac{i}{\hbar c} (E - m_e c^2 - eV(\rho, \varphi, z)) \psi_2 - \frac{\partial \psi_4}{\partial z} + e^{i\varphi} \left(\frac{\partial}{\partial \rho} + \frac{i}{\rho} \frac{\partial}{\partial \varphi} \right) \psi_3 &= 0, \\ -\frac{i}{\hbar c} (E + m_e c^2 - eV(\rho, \varphi, z)) \psi_3 + \frac{\partial \psi_1}{\partial z} + e^{-i\varphi} \left(\frac{\partial}{\partial \rho} - \frac{i}{\rho} \frac{\partial}{\partial \varphi} \right) \psi_2 &= 0, \\ -\frac{i}{\hbar c} (E + m_e c^2 - eV(\rho, \varphi, z)) \psi_4 - \frac{\partial \psi_2}{\partial z} + e^{i\varphi} \left(\frac{\partial}{\partial \rho} + \frac{i}{\rho} \frac{\partial}{\partial \varphi} \right) \psi_1 &= 0, \end{aligned} \quad (2)$$

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where $\psi_1, \psi_2, \psi_3, \psi_4$ are 4-components of the wave function. Potential $V(\rho)$ is axial-symmetrical respectively z -axis and does not depend on z coordinate...

4. FIGURES

Figures must be prepared and written in the separate files using the EPS-format. Here we show how the file with name Ris1.eps can be imported into the body of the article:

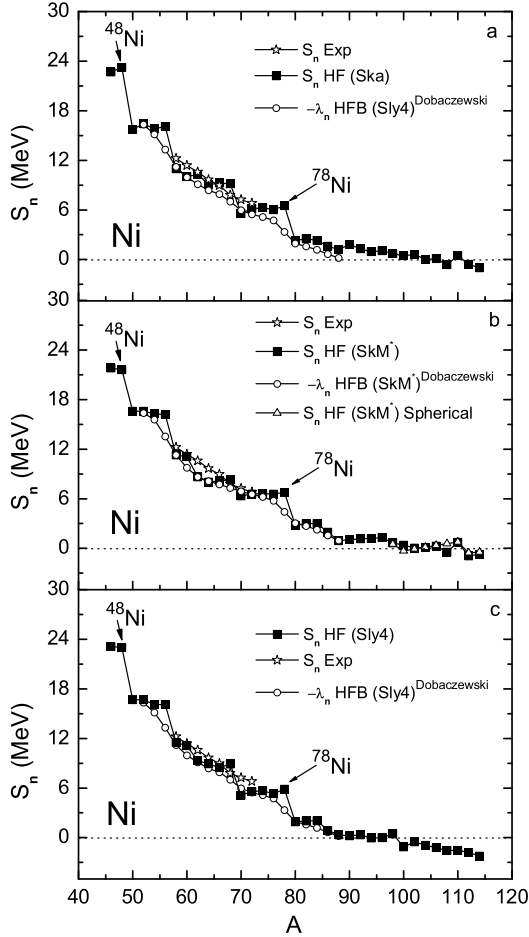


Fig.1. Separation energies of one neutron S_n for Ni isotopes depending on A compared to the experimental data [3] and to the values of neutron chemical potentials λ_n (Dobaczewski J.) [4] for forces Ska, SkM* and Sly4. In figure 1b in the vicinity of $A = 110$ are shown the data for the spherical HF+BCS calculations

5. TABLES

Table 1. High energy QED nonlinear effects

No	x	y
1	0.5	1.1
2	0.7	1.2
3	0.9	1.3

6. THE CONCLUSION

The research made in the present work ... allows to extract the following results:

- in our calculations ... ;
- the obtained results show that ...

7. NOTES

Large formulae, figures and tables may be given *in the single-column format*. Large figures and large tables can be included into the article analogously as it was shown for large formula (2) in the section 3. Here, at the same time we showed how to refer to formulae.

Please, use the following standard for references: [1] for books and [2] for articles, etc.

References

1. E. Kotel'nikov, P. Chebotaev. *Publishing system LATEX - 2 ϵ* , Novosibirsk, "Siberian khronograph", 1998, 493p. (in Russian).
2. P.A. Doyle, P.S. Turner. Relativistic Hartree-Fock X-ray and electron scattering factors // *Acta Cryst.* 1968, A24, p.290-397.
3. G. Audi, A.H.Wapstra, C.Thibault. The AME2003 atomic mass evaluation (II) // *Nucl. Phys.* 2003, A729, p.337-676.
4. M.V. Stoitsov, J. Dobaczewski, W. Nazarewicz, S. Pittel, D.J. Dean. Systematic study of deformed nuclei at the drip lines and beyond // *Phys. Rev.* 2003, C68, 054312, p.11.; <http://www.fuw.edu.pl/~dobaczew/thodri/thodri.html>
5. V.F. Boldyshev and Yu.P. Peresunko. On determination polarization from asymmetry of the recoil electrons in triplets // *Yad. Fiz.* 1974, v.19, p. 144-147 (in Russian).
6. L.P. Korda, E.G. Kopanets. To the deformation of light nuclei // *PAST. Series: General and Nuclear Physics.* 1981, 2(16), p. 3-6 (in Russian).
7. V.Yu. Gonchar, E.V. Inopin, S.P. Tsytko. *Light nuclei and generalized model*: Preprint. KIPT, D-001, 1959, 37p. (in Russian).
8. G.A. Savitsky, A.A. Nemashkalo, V.M. Khvastunov. Isospin splitting quadrupole resonances in nuclei // *Int. Conf. on Nuclear Physics with Electromagnetic Interactions.* Maintz, Germany, 1979, p.321.

ЗАГЛАВИЕ СТАТЬИ

А.В. Иванов,...

На основе метода Хартри-Фока с силами Скирма (Ska, SkM*, Sly4) при учете деформации исследовано положение протонной и нейтронной границы стабильности и характеристики нейтронодефицитных и нейтроноизбыточных изотопов Fe, Ni и Zn. Расчеты предсказывают, что для изотопов Ni в окрестности $N \sim 62$ наблюдается большой скачок величины параметра деформации до $\beta \sim 0.4$. Обсуждается проявление магических чисел для изотопов никеля ^{48}Ni , ^{56}Ni , ^{78}Ni , а также для нейтроностабильного изотопа ^{110}Ni , который находится за пределами границы стабильности.

ЗАГОЛОВОК СТАТТІ

А.В. Іванов,...

На основі метода Хартрі-Фока з силами Скірма (Ska, SkM*, Sly4) при врахуванні деформації досліджено положення протонної і нейтронної границі стабільності і характеристики нейтронодефіцитних і нейтрононадлишкових ізотопів Fe, Ni і Zn. Розрахунки завбачають, що для ізотопів Ni в околі $N \sim 62$ спостерігається великий стрибок величини параметра деформації до $\beta \sim 0.4$. Обговорюються прояви магічних чисел для ізотопів нікелю ^{48}Ni , ^{56}Ni , ^{78}Ni , а також для нейтроностабільного ізотопу ^{110}Ni , який знаходиться за межами границі стабільності.