masses of the pion and the nucleon). Under this significant assumption we calculated also the binding energies (the annihilation shift was not calculated - its order of magnitude is $\lesssim \Gamma$, see [3, 4]). It is seen from the table that the widths Γ decrease strongly with increasing number of nodes. This can be readily understood by bearing in mind that, as follows from [4], Γ is inversely proportional to the cube of the radius of the orbit in ρ space (which increases with increasing number of nodes). In view of the cutoff of the harmonic series (2), the masses and apparently also the widths given in the table are higher than the true ones. This, however, can hardly change the main conclusion, namely that the calculations point to the existence of sufficiently narrow bound quasinuclear states in the three-particle system $2N\bar{N}$. Thus, the quasinuclear model predicts baryon resonances of a new type.

The results of the present paper make quite likely the hypothesis of existence of four-particle quasinuclear systems of the type $2N.2\bar{N}$, which could appear as boson resonances with isospin $I \leq 2$ and with masses in the interval 2500 - 3500 MeV.

A detailed exposition of the work is being planned in another article. The authors are grateful to S.I. Guseva, A.I. Volovik, V.E. Maiorov, and I.A. Rumyantsev for help in the numerical calculations, and L.N. Bogdanova, V.A. Karmanov, and L.A. Kondratyuk for useful discussions.

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CORRELATIONS BETWEEN REDUCED NEUTRON AND RADIATIVE WIDTHS ON NEUTRON RESONANCES IN COMPOUND NUCLEI WITH ODD NUMBER OF NEUTRONS

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There has been increased interest recently in experimental determination of the correlations between the reduced neutron widths Γ^0_{ni} and the reduced partial radiative widths $\Gamma^0_{\gamma if}$ on neutron resonances (see [1 - 3]). This question was considered theoretically in [4, 5]. In [5], the correlations between Γ^0_{ni} and $\Gamma^0_{\gamma if}$ were investigated on the basis of the semi-microscopic approach developed in [6, 7]. In the present note we consider cases convenient for experimental study, when large correlations can occur between Γ^0_{ni} and $\Gamma^0_{\gamma if}$ on neutron s and p resonances for compound nuclei with odd neutron numbers.

We regard the (n, γ) reaction as a two-step reaction: first neutron capture, followed by E1 or M1 transitions. According to [5, 7], the correlations between Γ^0_{ni} and $\Gamma^0_{\gamma if}$ take place in those cases when the main contribution to both processes is made by the same components of the wave functions of the highly excited states (resonances). The largest values of these correlations should be expected in nuclei whose strength functions for the s and p neutrons have large values.

In the case of odd N of spherical nuclei produced after capture of an s neutron, large correlations between Γ^0_{ni} and $\Gamma^0_{\gamma if}$ for E1 transitions should be expected in those nuclei, whose low-lying single-quasiparticle states are the states $p_{1/2}$ and $p_{3/2}$. These include the compound nuclei ^{51}Cr, ^{53}Cr, ^{55}Fe, ^{59}Fe, ^{59}Ni, ^{61}Ni, ^{63}Ni, ^{65}Ni, ^{143}Ce, ^{145}Ce, ^{191}Pt, ^{195}Pt, ^{197}Pt, ^{195}Hg, ^{197}Hg, ^{199}Hg, ^{201}Hg, and others. In [3] a correlation R = 0.80 between Γ^0_{ni} and $\Gamma^0_{\gamma if}$ was found for twelve resonances for E1 transitions to the low-lying states in ^{51}Cr, ^{53}Cr, ^{55}Cr, and ^{61}Ni.

In odd N deformed nuclei produced after capture of an s neutron, one should expect large correlations between Γ^0_{ni} and $\Gamma^0_{\gamma if}$ for E1 transitions to low-lying states with $K^\pi = 1/2^-$ and $3/2^-$. The most favorable for the observation of large correlations are the following compound nuclei: ^{155}Sm, ^{155}Gd, ^{157}Gd, ^{159}Gd, ^{157}Dy, ^{159}Dy, ^{169}Er, ^{171}Yb, ^{181}Hf, ^{183}W, ^{187}Os, and others.

In the case of p-neutron capture, we should expect large correlations between Γ^0_{ni} and $\Gamma^0_{\gamma if}$ for E1 transitions to low-lying $s_{1/2}$ and $d_{3/2}$ states of nuclei having large strength functions for p neutrons. These include the compoung nuclei ^{87}Kr, ^{89}Sr ^{89}Zr, ^{95}Zr, ^{93}Mo, ^{95}Mo, ^{97}Mo, ^{99}Mo, ^{101}Mo, ^{93}Ru, ^{101}Ru, ^{103}Ru, ^{103}Pd, ^{105}Pd, ^{107}Pd, ^{109}Cd, ^{111}Cd, and ^{113}Cd. It is shown in [8, 9] that following p-neutron capture by the nuclei ^{92}Mo and ^{98}Mo and in E1 decay of these resonances there appear clearly single-quasiparticle components of the wave functions of the highly excited states (resonances).

It is of interest to perform experiments aimed at observing the correlations between the reduced neutron and radiative widths on neutron resonances in the indicated nuclei.

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