for $|R|^2$ in the "dips" (see Fig. 2). We see that $|R|^2$ decreases with increasing E, starting with a "threshold" value $E \approx 10^2$ V/cm ($v_E \approx 0.1\ v_{Te}$), and subsequently to $E \approx 10^3$ V/cm ($v_{Te} \approx v_E$). Since, in accordance with Fig. 2, the H_{11} wave does not pass beyond the plasma "piston" in this case and is reflected from it only in part (in our case within 3 - 4 μsec), obviously there is appreciable wave absorption in the plasma. The absorption coefficient can be found from the known relation

$$|D|^2 = 1 - |R|^2 - |T|^2,$$

where $|T|^2$ is the transmission coefficient $|T|^2 = 0$). Thus, a strong increase of $|D|^2$ takes place with increasing E in the range of E investigated by us. This phenomenon is apparently connected with the excitation of an instability that leads to plasma heating. The already-noted decrease of the duration of the "cutoff" with increasing E is due to the spreading of the plasma.

The observed anomalously strong electromagnetic-wave absorption in a collisionless plasma (in the absence of an external magnetic field), occurring at electric field intensities higher than 100 V/cm, makes it possible to realize effective transfer of the wave energy to the plasma.

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MAGNETIC MOMENTS OF THE 114 AND 270 keV LEVELS IN Pm^{149}

R. B. Begzhanov, Dzh. Gaffarov, and K. T. Salikhbaev
Institute of Nuclear Physics, Uzbek Academy of Sciences
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Experimental data on the gyromagnetic ratios of excited states play an important role in the verification of the theory of collective magnetic properties, and also in the understanding of some aspects of nuclear structure and nuclear magnetism. The present paper is devoted to an investigation of the excited states of Pm^{149} by determining the g-factors of the 114 and 270 keV level and the angular correlation of the gamma radiation of the cascades 536 - 114, 424 - 114, 268 - 270, and 268 - 156 keV.

The experimental setup consisted of a fast-slow coincidence scheme, where the element selecting the fast coincidences consisted of a time-amplitude converter [1] and an electromagnet.

The 1.8-hr Nd^{149} source was obtained by irradiating a natural mixture of neodymium isotopes in the compound NdO_3 by thermal neutrons from the VVR-c reactor of the Uzbek Academy Institute of Nuclear Physics. The source was dissolved in water and placed in a container of 5 mm diameter and 5 mm height.

The g- factors of the 114 and 270 keV levels were measured by an integral method. Since the main purpose of the present investigation was to determine the g-factors of the 114 and 270-keV levels, it was of interest to measure the angular correlation of the gamma rays incident on these states and de-exciting them.

The angular correlation functions of the cascades, determined from a least-squares analysis of the experimental data and corrected for the attenuation and for the contributions from other cascades, have the following values:

$$W(\theta) = 1 + (0{,}047 \pm 0{,}009) P_2(\cos\theta) + (0{,}007 \pm 0{,}008) P_4(\cos\theta)$$

for the 536 - 114 keV cascade,

$$W(\theta) = 1 - (0{,}127 \pm 0{,}011) P_2(\cos\theta) + (0{,}008 \pm 0{,}010) P_4(\cos\theta)$$

for the 424 - 114 keV cascade,

$$W(\theta) = 1 - (0{,}218 \pm 0{,}012) P_2(\cos\theta) + (0{,}012 \pm 0{,}012) P_4(\cos\theta)$$

for the 268 - 270 keV cascade, and

$$W(\theta) = 1 - (0{,}142 \pm 0{,}09) P_2(\cos\theta) + (0{,}020 \pm 0{,}011) P_4(\cos\theta)$$

for the 268 - 150 keV cascade.

The last value was obtained by us for the first time. It should be noted that the first three angular-correlation functions agree, within the limits of experimental error, with the values obtained in [2, 3].

A graphic analysis was carried out by the method of Arns and Wiedenbeck [4] for the 268 - 156 keV cascade, and the E2 component of the 268 keV transition was determined as 7 - 10% or 79 - 81%, under the assumption that the 156-keV transition is pure E1.

The measurement of the parameters R for the 424 - 114 and 268 - 156 keV cascades was performed by a method described by us earlier [5]. The results are given in Table 1, which shows that the value of the g-factor of the 114-keV level agrees, within the limits of errors, with the results of [3]. The value of the g-factor of the 270-keV level was obtained by us for the first time.

Table 1
Results of measurements of A_2, R, and g

Level, keV	A_2	τ, nsec	G_2	R	g
114	−0,127±0,011	3,64	0,81	−0,0943±0,0071	0,92 ±0,08
270	−0,142±0,009	3,72	0,85	−0,0833±0,0040	0,62 ± 0,06

Table 2
Theoretical and experimental values of the magnetic moments for the two lower levels in Pm^{149}

State, keV	μ_{sp}	μ_{qp}	μ_0	μ_1	μ_2	μ_{theor}	μ_{exp}
114 ($5/2^+$)	4,79	3,65	1,51	0,75	0.29	2.55	2.20 ±0,20
270($7/2^-$)	1,72	2,19	0,75	0,97	0,35	2.06	2,17 ±0,21

Knowing the exactly established values of the spins of the levels 114 and 270 keV, we can determine their magnetic moments:

$$\mu(114) = (2,20 \pm 0,21) \text{ n.m.}$$

and

$$\mu(270) = (2,17 \pm 0,21) \text{ n.m.}$$

The Schmidt model predicts for levels with spin $I^\pi = 5/2^+$ and $I^\pi = 7/2^-$, in nuclei with an odd proton, magnetic moments 4.79 and 1.72 nuclear magnetons, respectively, which do not agree with our results. This points to the presence of impurities in these states, i.e., they are not purely single-particle. We have therefore attempted to explain the characteristics of the nuclei by using the Kisslinger and Sorensen model of paired plus quadrupole forces [6]

$$\mu(I_j) = (C^j_{j00})^2 \mu_{qp}(I_j) + \mu_1 + \mu_2 \quad ,$$

where C^J_{j00} is the non-phonon component of the magnetic moment, μ_1 and μ_2 are the single-phonon and two-phonon corrections, and $\mu_{qp}(I_j)$ is the quasiparticle magnetic moment of the state under consideration.

Table 2 shows and compares the obtained data for 114 and 270 keV states with the theory. It follows from Table 2 that the experimental and theoretical values are in good agreement. This in turn indicates that the assumption 114 and 270 keV level are mixtures of single-particle and phonon state is correct.

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CONDENSATION OF EXCITON GAS IN GERMANIUM

V. M. Asnin and A. A. Rogachev
A. F. Ioffe Physico-technical Institute, USSR Academy of Sciences
Submitted 24 February 1969
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In [1 - 3] we reported observation of metalization of exciton gas in germanium, manifest by a sharp increase of the electric conductivity when a certain critical value of the exciton density is reached. These experiments, however, did not make it possible to explain the mechanism of such a transition. It is possible in principle that the transition is the result of a more or less gradual collapse of the energy gap between the exciton levels and the states