tensor $P^{jk}_{\alpha\beta}$ is indicated in reference 6.

According to (1), the absorption curve $A(\omega)$ consists of a series of $(a = \xi, \ldots .)$ Gaussian lines, shifted by a distance $\Sigma_\gamma \Delta^2_{\alpha\gamma}/\omega_\gamma$ from the resonance frequencies ω_a. The width of these lines (at half the intensity) is calculated from the expression $\Delta\nu_{1/2} = 2.35\,\Delta_{a0}$. The coefficient $\Delta^2_{\epsilon 0}$ differs from the corresponding result $\langle(\Delta\nu)^2\rangle$ of Van Vleck[5] in that $\Delta^2_{\epsilon 0d}$ for the $\mathcal{H}_d$ interaction is twice $\langle(\Delta\nu)^2\rangle_d$, and $\Delta^2_{\epsilon 0}$ depends on the value of the isotropic exchange interactions. Therefore, the acoustic magnetic resonance is a much-promising method of investigation of exchange interactions in crystals.

Furthermore, it follows from our calculations that if $\Delta\nu_{1/2}$ in a crystal is determined by dislocation-type defects, then for $I = 3/2$ and $I = 5/2$ the ratio δ of the ultrasonic resonance width and the magnetic resonance width are respectively $\delta(3/2) = \sqrt{5/3}$, and $\delta(5/2) = \sqrt{12/5}$. The experimental values are $\delta(3/2) = 1.7$ (reference 1) and $\delta(5/2) > \delta(3/2)$ (reference 2).

We note that in the event of the excitation of free nuclear precession about the direction of H by an ultrasonic moment, the form of the decrease in the nuclear induction signal G with time will be described by the function $G_K(t)$ obtained from $A(\omega)$ by a Fourier transform [cf. reference 3, (3.17)]. Since $G_K(t) \neq G_M(t)$, it follows that ultrasonic moment methods can yield new results compared with the usual spin-echo method.

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261

BETA AND GAMMA SPECTRA OF THE Sb^{113} *AND* Sb^{115} *ISOTOPES*

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RECENTLY Selinov and his co-workers[1] discovered the new antimony isotopes Sb^{113} and Sb^{115}. The isotopes were obtained by the method of absorption of the approximate values of their end-point beta spectra.

The beta and gamma spectra of these isotopes were investigated with a double-lens beta spectrometer. The positron spectrum of Sb^{113} was found to consist of two components with end-point energies of 1.85 ± 0.02 and 2.42 ± 0.02 Mev. The values of log ft are 4.4 and 4.7. The end-point energy of the positron spectrum of Sb^{115} is 1.51 ± 0.02 Mev, and log ft = 4.25. The shape of the spectra is resolved. In the conversion-electron spectrum of Sb^{115} a gamma line with an energy of 0.499 ± 0.002 Mev was found. The conversion coefficient α_K is 0.00625. The ratio of the conversion coefficients of the K and L shells is about 6. According to preliminary data, eight gamma lines were observed in the Sb^{113} gamma spectrum, which was investigated with a scintillation spectrometer. The data on the Sb^{113} gamma spectrum are being published in the transactions of the 10th Conference on Nuclear Spectroscopy.

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262

A ROTATORY MAGNETO-MECHANICAL EFFECT IN A LOW PRESSURE PLASMA

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IT has been pointed out in the literature[1] that in a low pressure positive column the gas should rotate around the axis of the column if a longitudinal uniform constant magnetic field is applied. One can attempt to detect this effect using a thin solid plate put into the gas which should be dragged by the rotation of the gas. We have performed such experiments.

The positive column was produced in a vertical cylindrical tube which contained activated electrodes at both ends and which was completely symmetrical about both the vertical axis and the horizontal plane. The presence of activated electrodes at both ends enabled us to change the direction of the current in the tube. The upper electrode was pierced, and through it was passed a thin quartz fiber (length 30 cm, diameter 20μ) hanging along the axis of the tube. The fiber supported a vertically suspended rectangular mica plate with a mirror stuck on it in the middle. This enabled us to observe the position of the plate by the usual means of a light beam and scale.

Two coils with a narrow gap between them to let the light beam through were put on the tube. The current passing through the coils produced a constant magnetic field in the tube which was parallel to the tube axis and to the current in it. The degree of uniformity of the field over the tube was not less than 97%. The coils and the tube were put in coaxial positions by regulating screws which could raise the base of the coils.

We performed the experiments in inert gases, mainly in argon, and partly in neon. The gas pressure was varied between 100 and 500μ Hg. The following observations were made:

1. When a constant magnetic field was applied to the plasma the plate suspended in it deviated from its initial position; once the vibrations around the new equilibrium position were damped out the plate remained deflected at a constant angle. Such a deflection was observed in both gases and for all pressures and magnetic fields (from 100 to 800 oe) used. The deflection was appreciable (more than several degrees) and could easily be observed, even without a scale.

The stationary character of the effect in a system with a constantly acting restoring force (the elasticity of the fiber) shows that the effect is produced by the constant magnetic field and not by the turbulent inductive electrical field which is produced when the magnetic field appears.

2. When we reversed the direction of the magnetic field the deflection of the mobile system was also reversed.

3. However, when the direction of the current in the tube was reversed, the direction of the deflection of the suspended system remained the same. This shows that the effect is not caused by the plasma current and the applied magnetic field not being completely parallel, for otherwise the effect would reverse its sign when the direction of the current in the tube was reversed.

A possible cause of this magneto-mechanical effect is that the magnetic field produces a rotation of the positive column around its longitudinal axis. This could be caused by the diffusion of the ions and electrons in the plasma in the magnetic field in a direction perpendicular to this field and to the direction of the concentration gradient ("Hall diffusion current," see reference 2). The concentration gradient is in the radial direction in a cylindrical plasma and the "Hall diffusion currents" of the free electrons and of the ions must be in opposite azimuthal directions. The momenta of the two currents are unequal and the gas as a whole will thus begin to rotate.[1]

Further quantitative studies of this effect will enable us to verify the correctness of this interpretation.

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263

ON THE HOLE COMPONENT OF THE FERMI SURFACE IN BISMUTH

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As reported previously,[1,2] new high-frequency oscillations associated with a group of holes were observed during a study of the anisotropy of magnetic susceptibility in Bi at very low temperatures. Further investigation showed that the shape of the Fermi surface for this group consists, to a first approximation, of an ellipsoid of rotation, elongated along the trigonal axis, which has the following parameters. Area of the principal sections: perpendicular $S_1 = 6.75 \times 10^{-42}$ gm^2 cm^2/sec^2 and parallel to the trigonal axis $S_2 = 25.75 \times 10^{-42}$ gm^2 cm^2/sec^2; hole concentration $n^H = 0.34 \times 10^{18}$ cm^{-3}; bounding