along the y axis and is equal to $E = (a_e v_x/c)4\pi I_z$. Therefore the Lorentz force is $F_y = e(E - v_x B_z/c)$, and the Hall current density is $j_y = -(\sigma v_x/c)(B_z - a_e \cdot 4\pi I_z)$. This current vanishes after appearance of surface charges that produce an electric field $E_{H1} = j_y/\sigma$. The Hall field intensity is $E_{Hy} = E_{H1} + E = v_x B_z/c$, whence $R_0 = 1/cne$. Thus in the case of free electrons possessing magnetization, the Hall constant remains the same as if the whole magnetization were produced exclusively by bound electrons. In this case the derivation given differs from the usual one only in the treatment of the physical interpretation of the terms that enter E_{Hy}.

The effect considered plays an essential role in the Nernst effect, where because of the electrical polarization connected with current carriers that possess a magnetization, there can arise a field, two orders of magnitude larger than the usual Nernst field, which is produced by the difference of speeds of electrons moving toward the hot and the cold ends of the conductor.

Current carriers of any type moving toward the hot end of the metal have a larger mean magnetization than carriers that are moving in the opposite direction. Therefore when a heat current flows along the conductor, there is a transfer not only of energy but also of magnetic moment. As a result, in this case also there is produced an electric polarization, which leads to the appearance of a transverse electric field. Calculation of the part Q_{se} of the ferromagnetic Nernst constant Q_s that is due to the effect under consideration leads to the expression

$$Q_{se} = \frac{2\tau(\eta)\eta a_e}{3cm^* I_s}\frac{\partial I_s}{\partial T}\cdot 300 = \frac{K a_e}{c C_0 I_s}\frac{\partial I_s}{\partial T}\cdot 300 \text{ [v/deg-gauss]}. \quad (1)$$

Here $\tau(\eta)$ is the relaxation time, η is the Fermi energy, K is the thermal conductivity, C_0 is the electronic heat capacity, and I_s is the spontaneous magnetization. It is easily demonstrated that at temperatures near the Curie point and for $|a_e| \geq 0.1$, we have $Q_{se} \gg Q_s'$, where Q_s' is the usual Nernst constant.

In the Nernst field there is also included a field connected with spin-orbit interaction of the current carriers with the ions. If in first approximation, as was done by Karplus and Luttinger,[2-3] we describe the spin-orbit interaction by means of an effective field $H_{eff} = H_{spo} I_e/I_s$, then we can derive a formula for the part of the Nernst constant connected with this interaction; it will differ from (1) only by a positive multiplier. Comparison with experimental data[4-5] on nickel and on iron-nickel alloys shows that (1) describes well the temperature dependence of Q_s from room temperature to the Curie point and gives the right order of magnitude for the value of Q_s.

It follows from (1) that, independently of the type of current carrier, the coefficient Q_s is positive if the magnetization of the carriers is directed opposite to the spontaneous magnetization of the metal, and is negative if both magnetizations are parallel. Thus from the sign of Q_s it is possible to determine the signs of the magnetizations of the current carriers. As Smith's[4] experimental data show, Q_s is negative in iron and positive in nickel and cobalt. Consequently, the magnetization of the current carriers is directed along the spontaneous magnetization in iron and opposite to it in cobalt and in nickel.

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CORRECTION TO THE ARTICLE BY D. P. GRECHUKHIN 'SOME EXPERIMENTAL POSSIBILITIES FOR VERIFICATION OF THE MODEL OF NONAXIAL NUCLEI WITH A ROTATIONAL SPECTRUM'

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THROUGH an oversight on the part of the author, the coefficient of the third term of Eq. (4) is in error. The rigorously correct formula is

$$\langle r^2\rangle_{DF} = \frac{3}{5}ZR_0^2\Big\{1 + \frac{5}{4\pi}\beta^2 + \frac{25}{12\pi}\cdot\sqrt{\frac{5}{4\pi}}(C_{2020}^{20})^2\beta^3\cos\gamma\,[1 - 4\sin^2\gamma]\Big\}.$$

Recognizing that $(C_{2020}^{20})^2 = 2/7$ and $(50)/21)\sqrt{5/\pi} \approx 3.004$, we obtain, with sufficient accuracy

$$\langle r^2\rangle_{DF} = \frac{3}{5}ZR_0^2\Big\{1 + \frac{5}{4\pi}\beta^2 + \frac{3}{8\pi}\beta^2\cos\gamma\,[1 - 4\sin^2\gamma]\Big\}.$$

The author is deeply grateful to É. E. Fradkin for calling his attention to the error and for undertaking the recalculation of $\langle r^2\rangle_{DF}$.