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LETTER TO THE EDITOR

A. G. SHEPELEV

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IN the review "Gap Anisotropy in the Energy Spectrum of Superconductors" (Usp. Fiz. Nauk 96, 217, (1968) [Sov. Phys.-Usp. 11, 690 (1969)]) the author omitted the following information, which must be included:

1. An analysis of the temperature dependence of the critical magnetic field of pure aluminum from 0.3 to 1.2°K has shown[1] that the mean-squared anisotropy of the energy gap $\langle a^2 \rangle = 0.013$, and the average gap is $2\Delta/k_BT_c = 3.43$.

2. The concepts of the influence of the "interaction" of the Fermi surface and the boundaries of the Brillouin zone (tangency, overlap[2], and their vanishing[3], i.e., the change of the topology of the Fermi surface) on the physical properties of metals were used also to explain the singularities of the concentration dependence of T_c of dilute solid solutions of indium with Cd, Pb, Sn, and Tl[4] and of the derivative $\partial T_c/\partial p$[5], where p is the externally applied pressure[5]. The features of the concentration (or temperature) dependence of the ratio of the parameters of the crystal lattice[6,4], the thermal emf[7], the magnetic susceptibility[8], the coefficient of electronic specific heat[9], and the Knight shift[10], observed for definite concentrations of these impurities in indium, were also discussed within the framework of these concepts.

3. A detailed investigation of the tunnel effect in niobium single crystals has shown[11] that the gap $2\Delta/k_BT_c = 3.6$ for the [100] direction, 3.9 for [110], [102], and [112], 410 for [111], and 4.06 for [311]. In addition, the structure of the tunnel characteristics was obtained, and, as proposed by the authors, it can correspond to much smaller energy gaps of niobium.

One must take the opportunity to list the essential results of the most recent papers:

a) Investigations of the absorption of longitudinal ultrasound in pure single crystals of thallium[12] and zinc[13] have made it possible to refine the values of the minimum gaps on the corresponding strips of $\mathbf{k} \cdot \mathbf{v}_F = 0$ of the Fermi surface. For thallium, $2\Delta/k_BT_c = 3.90$ at a sound wave-vector orientation $\mathbf{k} \parallel [0001]$, 3.52 for $\mathbf{k} \parallel [1210]$, and 3.70 for $\mathbf{k} \parallel [1010]$. For zinc, $2\Delta/k_BT_c = 3.41$ for $\mathbf{k} \parallel [0001]$, 3.64 for $\mathbf{k} \parallel [1210]$, and 3.79 for $\mathbf{k} \parallel [1010]$.

b) A study of the tunnel effect in thick films of indium[14] and thallium[15] has revealed an appreciable anisotropy of the gap in their spectrum. For indium, the maximum gap is $2\Delta/k_BT_c = 4.99$, whereas in thallium a number of values of the gap was obtained, $2\Delta = 0.59$, 0.69, 0.97, and 1.29 MeV for an average gap 0.73 MeV ($3.55\ k_BT_c$).

c) Investigations of the tunnel effect in films of superconducting tin[16] have established that the fine structure of the current-voltage characteristics in the voltage region $eV \lesssim \Delta$ (previously observed in several investigations of lead and tin films) may be due to the presence of a transition layer, consisting of microcontacts, between the elements of the pair. In the authors' opinion, the anisotropy of the energy gap cannot explain this structure, since it has been noted also in tin films containing impurities.

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