$p = 3$ the slow shear mode. In Table 1 the values of γ_L and γ_H as obtained from elastic data, are compared with the similar quantities derived from thermal expansion data. As can be seen, the agreement between the two sets of data is very good for magnesium and cadmium, while in the case of cadmium sulfide, there are large discrepancies between the thermal expansion and elastic γ_H. This is not surprising, as such discrepancies are expected when optical phonons contribute appreciably to the lattice vibration spectrum [4], which is the case for cadmium sulfide. The thermal expansion value of γ_L contains probably some error, as the values of the low temperature thermal expansion coefficient were determined from data of the lattice parameter as a function of temperature [15].

It is interesting to note that the negative thermal expansion coefficient of cadmium at low temperatures [16, 17] is not reflected in $\gamma^p(\mathbf{q})$ becoming negative. This is probably due to the dominance of the modes with positive values of $\gamma^p(\mathbf{q})$ in the averaging process. On the other hand, in the case of cadmium sulfide, the $\gamma^p(\mathbf{q})$ for the shear modes are both negative throughout, as well as γ_L. This is in agreement with the fact that both thermal expansion coefficients of cadmium sulfide become negative at low temperatures.

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Argonne National Laboratory,
Argonne, Ill. 60439,
U.S.A.

D. GERLICH†

REFERENCES

1. SLATER J. C., In *Introduction to Chemical Physics*. McGraw Hill, New York (1939).
2. SHEARD F. W., *Phil. Mag.* **3**, 1381 (1958).
3. COLLINS J. G., *Phil. Mag.* **8**, 323 (1963).
4. SCHUELE D. E. and SMITH C. S., *J. Phys. Chem. Solids* **25**, 801 (1964).
5. HIKI Y., THOMAS J. F., and GRANATO A. V., *Phys. Rev.* **153**, 764 (1957).
6. BRUGGER K., *Phys. Rev.* **137**, A1826 (1965).
7. COLLINS J. G. and WHITE G. K., In *Progress in Low Temperature Physics* (Edited by C. J. Gorter), Vol. IV, p. 450. North-Holland, Amsterdam (1964).
8. MASON W. B., In *Physical Acoustics and Properties of Solids*. Van Nostrand, Princeton, N.J. (1958).
9. EROS S. and SMITH C. S., *Acta metall.* **9**, 14 (1961).
10. SCHMUNK R. E. and SMITH C. S., *J. Phys. Chem. Solids* **9**, 100 (1959).
11. GARLAND C. W. and SILVERMAN J., *Phys. Rev.* **119**, 1218 (1960); *ibid.* **127**, 2287 (1962).
12. CORLL J. A., Case Inst. Technol. O.N.R. Tech. Rep. No. 6 (1962).
13. GERLICH D., *J. Phys. Chem. Solids* **28**, 2575 (1967).
14. CORLL J. A., *Phys. Rev.* **157**, 623 (2967).
15. REEBER R. R., *Proc. Symp. Therm. Exp. Solids* To be published.
16. MADAIAH N. and GRAHAM G. M., *Can. J. Phys.* **42**, 221 (1964).
17. WHITE G. K., In *Proc: 7th Int. Conf. Low Temp. Phys.*, p. 685. University of Toronto Press (1961).
18. *American Institute of Physics Handbook*. McGraw Hill, New York (1957).

†*Permanent address:* Physics Department, Tel Aviv University, Ramat Aviv, Israel.

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Antiferromagnetic structures of USb and UBi*

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THE URANIUM compounds with group VA elements (N, P, As, Sb, and Bi, denoted by v) that have the NaCl-type structure are antiferromagnetic. The values of the Néel temperature (T_N), the paramagnetic Curie temperature (θ), and the paramagnetic moment (n_μ) increase along the series from UN to UBi. These properties and the high electrical conductivity were considered in a

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