Sound Attenuation in Magnetic Metals(Physics)

Abstracts of Papers Published in Other Journals

Physics

Theory of Raman Scattering in Magnetically Ordered Phases of EuSe and EuTe

Y. Ousaka, O. Sakai and M. Tachiki

Solid State Commun., **23** (1977), 589.

The first order Raman scattering in various phases of EuSe and EuTe was theoretically studied. The Raman lines which depend on spin structures are caused via the spin-dependent polarizabilities. The phonon dispersion relations of the crystals were calculated on the breathing shell model. The Stokes shifts and intensities of the Raman lines, and their polarization selection rules obtained from the present theory are in good agreement with experiments.

Sound Attenuation in Magnetic Metals

Sadamichi Maekawa and Masashi Tachiki

Progr. Theor. Phys., **58** (1977), 787.

The anomalous sound attenuation due to spin fluctuations near the magnetic phase transition temperatures in itinerant magnets and the rare earth metals is theoretically studied. By applying Tsuneto and Kadanoff and Falko's formulas, the attenuation coefficient is calculated. The calculated results explain the critical anomalies observed in magnetic metals such as Ni and Gd. By comparing the results with that for insulating magnets, the expression of the exchange striction is obtained. The effect of magnetic field on the critical attenuation is discussed.

Electron-Microscopic Study on the Low-Temperature Phase of the Co-Rich Co-V Alloy System

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Phys. Status Solidi A, **42** (1977), 469.

An electron-microscopic study on a 15.6 at%V-Co single crystal annealed at 600°C for 168 h is carried out to determine the crystal structure of the low-temperature f.c.c. phase in the Co-rich Co-V alloy system. From the diffraction patterns observed in various crystallographic orientations, it is found that this phase is of the Cu_3Au-type superlattice structure. The dark-field images formed with the superlattice reflections reveal that these extra reflections originate not from any special regions of the specimen, but from its whole area. Super-dislocations and antiphase boundaries which are characteristic of the imperfections in the ordered alloy are also observed.