state of not only the current carriers but also the electrons localized near impurity centers. In particular, the existence of two self-consistent states (stable and metastable), having s-symmetry—hydrogenlike and fluctuon-type states—turns out to be possible at Coulomb centers of large radius. A transition of the electrons from one state to another should occur in the vicinity of a definite temperature [8]. Excitons may also have self-consistent fluctuon states of a different type[9]. Let us note that under definite conditions fluctuon complexes, containing two ("bifluctuons") or several electrons, will appear.

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F. F. Voronov. The Effect of Pressure on the Elastic Moduli of Solids

The paper is a review of the results of experimental investigations of the elastic properties of solids at high pressures. Basically, it describes the ultrasonic method of investigations and three sets of equipment, constructed at the Institute of High-pressure Physics of the USSR Academy of Sciences for investigations at hydrostatic pressures of up to 10 kbar, and at quasi-hydrostatic pressures of up to 30 and 100 kbar. Further, the results obtained are analyzed. It is shown that in a pressure range far from phase transitions, the elastic moduli increase with pressure and the effect of pressure ($\partial \ln M/\partial p$) is proportional to the compressibility of the investigated materials.

An equation of state of solids in the form of the Bridgman polynomial and valid up to 100 kbar, and the Murnagan equations of state are derived from the experimentally determined variation of the bulk modulus.

Analysis of the results of the investigation of the elastic characteristics of ionic crystals on the basis of the Born-Mayer central-force model showed that this model reproduces well the dependence of density on pressure even in the case of large deviations from the Cauchy relation (1 : 6, AgCl), satisfactorily describes the behavior of the bulk modulus under pressure (RbCl, RbI), and gives considerable deviations in the magnitudes of the shear constants and their derivatives with respect to pressure (RbCl).

The question of the anharmonicity of the lattice vibrations is considered—the Grüneisen constants are determined for long-wavelength sound vibrations in the investigated materials.

Distinctive features of the change in the elastic properties when a phase transition of the type NaCl → CsCl occurs in the rubidium halides, or when a 4f → 5d electron transition occurs in cerium, are demonstrated.

Results of investigations of the velocity of sound in polycrystals of NaCl, CsCl and AgCl at pressures of up to 100 kbar are given, and the prospects for the use of the ultrasonic method of investigations of the elastic properties of solids in the condensed state in a wide range of pressures, especially for the study of the properties of high-pressure phases, are noted.

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S. A. Al'tshuler. Spin-phonon Interactions and Mandel'shtam-Brillouin Scattering of Light in Paramagnets

The observation of the Mandel'shtam-Brillouin scattering of light in paramagnetic crystals may give valuable information about the interaction of the spin