

Contents

Introduction to Elementary Excitations in Solids A. A. Maradudin	1
Theoretical and Experimental Aspects of Localized and Pseudolocalized Phonons A. A. Maradudin	35
Localized and Pseudolocalized Excitations in Solids, as a Scattering Problem G. F. Nardelli	66
Phonons and Their Interactions W. Ludwig	93
Photon-Phonon Interaction in Semiconductors M. Balkanski	113
Determination of Phonon and Magnon Dispersion Curves by Neutron Spectroscopy M. F. Collins	156
Exploring the Excitation Spectra of Crystals Using Far Infrared Radiation A. J. Sievers	193
Study of Localized Excitations Caused by Point Defects Using Thermal Conductivity R. O. Pohl	259
Elementary Excitations and Their Observations R. J. Elliott	300
Spin Waves R. J. Elliott	306
Theory of Scattering in Solids and Localized Spin Waves J. Callaway	316
Individual and Collective Excitations in an Electron Gas P. Resibois	340

Optical Investigation of Phonons and Plasmons	
E. Burstein	367
Free and Bound Excitons	
J. J. Hopfield	413
Experimental Studies of Excitons in the Rare Gas Solids and the Alkali Halides	
G. Baldini	437
Localized Modes, Resonance Modes, and Correlation Functions	
A. A. Maradudin	455
Surface Spin Waves	
I. P. Ipatova, A. A. Klochikhin, A. A. Maradudin, and R. F. Wallis	476
Relation Between Phase Shift and Scattering Amplitude in Solid-State Scattering Theory	
J. Callaway	492
The Excited States of the <i>F</i> Center	
G. Chiarotti	499
Author Index	517
Subject Index	523