

1. Record Nr.	UNINA9910830888203321
Autore	Baym Gordon
Titolo	Landau fermi-liquid theory : concept and applications / / Gordon Baym and Christopher Petchick
Pubbl/distr/stampa	Weinheim, [Germany] : , : Wiley-VCH Verlag GmbH & Co. KGaA, , 2004 ©2004
ISBN	1-281-84302-4 9786611843021 3-527-61715-9 3-527-61716-7
Descrizione fisica	1 online resource (214 p.)
Disciplina	530.13 665.8
Soggetti	Fermi liquid theory Fermi liquids
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	LANDAU FERMI-LIQUID THEORY; CONTENTS; Preface; 1 Landau Fermi-Liquid Theory and Low Temperature Properties of Normal Liquid ³ He; Introduction; 1.1 Static Properties; 1.1.1 Quasiparticles; 1.1.2 Quasiparticle Energy and Interactions; 1.1.3 Equilibrium Properties; 1.2 Nonequilibrium Properties; 1.2.1 Quasiparticle Energies and Interaction; 1.2.2 The Kinetic Equation; 1.2.3 The Conservation Laws; 1.2.4 Transport Coefficients; 1.3 Collective Effects; 1.3.1 Sound in Fermi Liquids; 1.3.2 Spin Waves and Related Phenomena; 1.3.3 Response Functions, Inequalities, and Form Factors 1.4 Scattering of Quasiparticles and Finite Temperature Effects1.4.1 Landau Parameters and Scattering Amplitudes; 1.4.2 The Low Temperature Transport Coefficients of Liquid ³ He; Theory and Experiment; 1.4.3 Finite Temperature Transport Coefficients; 1.4.4 Finite Temperature Contributions to the Specific Heat and Magnetic Susceptibility; 1.5 Concluding Remarks; Appendix A: Some Useful Fermi Integrals; Appendix B: Properties of Q; Appendix C Fermi Liquid

Parameters for Liquid ^3He ; 2 Low Temperature Properties of Dilute Solutions of ^3He in Superfluid ^4He ; Introduction
2.1 Elementary Excitations of Dilute Solutions 2.2 Properties of one ^3He Atom in ^4He at $T = 0$; 2.2.1 Volume Occupied by ^3He ; 2.2.2 ^3He Effective Mass; 2.3 Interactions of the ^3He at Very Low Temperature; 2.3.1 ^3He Landau Parameters; 2.3.2 Low Temperature Properties of Dilute Solutions; 2.3.3 Phenomenological Effective Interaction; 2.3.4 Microscopic Approaches to the Effective Interaction; 2.4 Interaction Between the ^3He and ^4He ; 2.4.1 Effectives of Superfluid Flow on ^3He Quasiparticles; 2.4.2 Interaction of ^3He Quasiparticles with Long-Wavelength Phonons
2.4.3 Scattering of Phonons by ^3He Quasiparticles 2.4.4 First Sound in Dilute Solutions; 2.4.5 Second Sound; 2.4.6 Transport Properties; 3 Further Developments; Introduction; 3.1 Liquid ^3He ; 3.1.1 Quasiparticle Spectrum and Thermodynamic Properties; 3.1.2 Measurements of Transport Properties; 3.1.3 Density and Spin Fluctuations; 3.1.4 Calculations of Scattering Amplitudes; 3.1.5 Superfluid ^3He and the Landau Theory of Fermi Liquids; 3.2 Dilute Solutions of ^3He in Superfluid ^4He ; 3.2.1 Equilibrium and Transport Properties; 3.2.2 Higher-Momentum Excitations; 3.3 Spin-Polarized Systems
3.3.1 Spin-Polarized ^3He 3.3.2 Dilute Solutions of ^3He in ^4He ; 3.3.3 Other Systems; 3.4 Nuclear Applications; 3.4.1 Particles and Quasiparticles; 3.4.2 Quasiparticle Interactions in Nuclei and Nuclear Matter; 3.5 Electrons in Metals; INDEX

Sommario/riassunto

A professional reference for physicists working in condensed matter physics as well as in nuclear physics and astrophysics, on Landau's theory of Fermi liquids--a vital theory of both theoretical and practical use. The emphasis is on the practical development and application of the theory.
