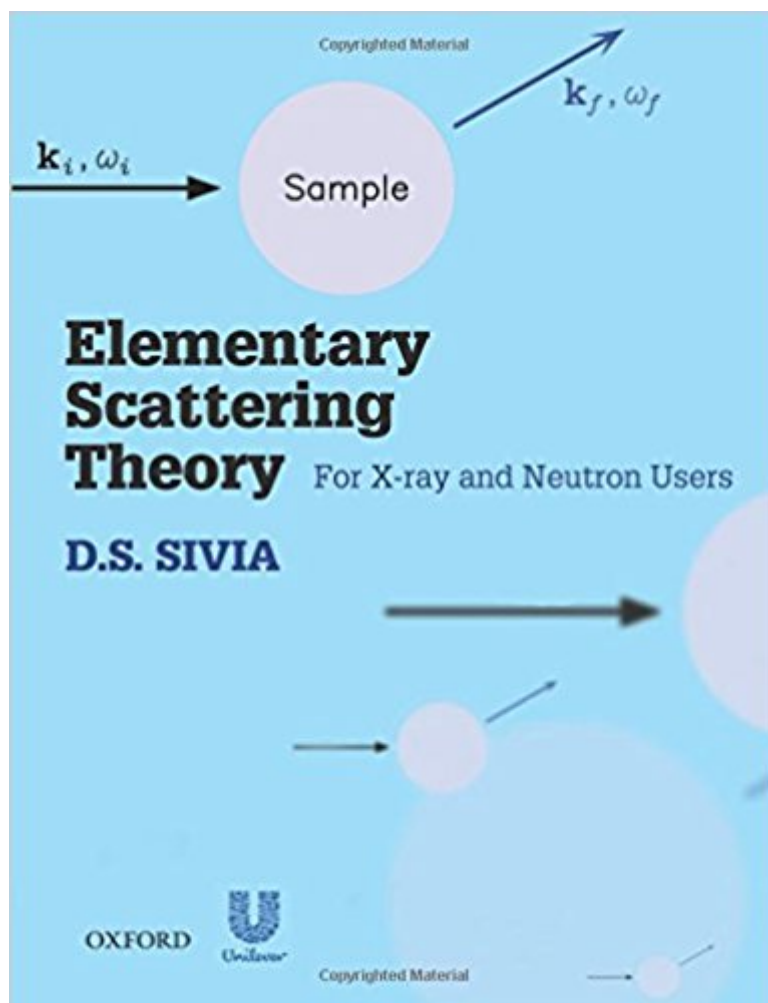## The book was found

# Elementary Scattering Theory: For X-ray And Neutron Users

## Synopsis

The opportunities for doing scattering experiments at synchrotron and neutron facilities have grown rapidly in recent years and are set to continue to do so into the foreseeable future. This text provides a basic understanding of how these techniques enable the structure and dynamics of materials to be studied at the atomic and molecular level. Although mathematics cannot be avoided in a theoretical discussion, the aim has been to write a book that most scientists will still find approachable. To this end, the first two chapters are devoted to providing a tutorial background in the mathematics and physics that are implicitly assumed in other texts. Thereafter, the philosophy has been one of keeping things as simple as possible.

## Book Information

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## Customer Reviews

Review from previous edition: "From length scales, logarithmic and linear, through basic mathematics including the very important complex numbers theory and Fourier series as well as the importance of the phases of waves, the biology and chemistry user of X-ray and/or neutron facilities can turn to this primer to educate themselves in the physics and mathematics behind their chosen techniques. These users' techniques are applied to many sample types, be they:- surfaces or interfaces; liquids or amorphous materials; crystals or powders. The techniques used include scattering (elastic and inelastic; small angle and wide angle; coherent and incoherent) as well as spectroscopy to study molecular structure and dynamics." --John R Helliwell, University of Manchester"This book offers a fresh approach to scattering theory which emphasises geometric

principles over quantum mechanical recipes. It demonstrates how scattering measurements can be understood in a simple and intuitive way via wave interference phenomena. Great care is taken to explain all the necessary mathematics, and the presentation is crystal clear. The book will be particularly useful for individuals using X-ray and neutron scattering to investigate the structure of materials in chemistry, biology, physics, materials science and engineering." --Andrew Boothroyd, Oxford University

Dr. Sivia studied for his degrees at Cambridge University and then did post-doctoral work at the Los Alamos National Laboratory. He was a staff scientist at the Rutherford Appleton Laboratory, and a College Lecturer at St. Catherine's College, Oxford, for many years before becoming a Fellow of St. John's College, Oxford. In addition to the present text, he has co-authored three books on Mathematics and Physics in the Oxford Chemistry Primers Series, and a book on Bayesian Data Analysis.

This book is excellent. Gives a clear and detailed explanation of the basic principles behind X-ray and neutron scattering. I was particularly interested in elastic small-angle neutron scattering and started reading it without having any background in scattering theory. The organization of the chapters and the way they were written made it easy to follow and understand.

Good reference value.

great!

Good

Dr. Sivia does an excellent job of introducing both the theoretical and experimental background required to understand the complex field of small angle scattering, reflectometry, and scattering in general. Beginning with an accessible chapter on the mathematical background and leading through both elastic and inelastic scattering, this text instructs simultaneously with mathematical derivations and visual examples, granting the reader insight that may not be gained through derivations alone.For an introduction to scattering theory, you will find no better text.

Elementary Scattering Theory: For X-ray and Neutron Users Polymers and Neutron Scattering

(Oxford Series on Neutron Scattering in Condensed Matter) Methods of X-ray and Neutron Scattering in Polymer Science (Topics in Polymer Science) Elements of Slow-Neutron Scattering: Basics, Techniques, and Applications Neutron Scattering in Layered Copper-Oxide Superconductors (Physics and Chemistry of Materials with Low-Dimensional Structures) Handbook of Optics, Third Edition Volume V: Atmospheric Optics, Modulators, Fiber Optics, X-Ray and Neutron Optics Brother Ray: Ray Charles' Own Story The Best of Bob & Ray: Excerpts from the Bob & Ray Public Radio Show (Volume One: 4 Cassettes, 4 Hours (64 Selections)) Ray of New (Ray #6) Inverse Acoustic and Electromagnetic Scattering Theory (Applied Mathematical Sciences) Electromagnetic Wave Propagation, Radiation, and Scattering: From Fundamentals to Applications (IEEE Press Series on Electromagnetic Wave Theory) Understanding Physics (Motion, Sound, and Heat / Light, Magnetism, and Electricity / The Electron, Proton, and Neutron) The Neutron: A Tool and an Object in Nuclear and Particle Physics Computational Methods of Neutron Transport Neutron Physics for Nuclear Reactors: Unpublished Writings by Enrico Fermi We Got the Neutron Bomb : The Untold Story of L.A. Punk Principles and Applications of Ion Scattering Spectrometry: Surface Chemical and Structural Analysis (Wiley Series on Mass Spectrometry) Light Scattering, Size Exclusion Chromatography and Asymmetric Flow Field Flow Fractionation: Powerful Tools for the Characterization of Polymers, Proteins and Nanoparticles Dynamic Light Scattering: The Method and Some Applications (Monographs on the Physics and Chemistry of Materials) Optical Scattering: Measurement and Analysis, Third Ed. (Press Monograph)