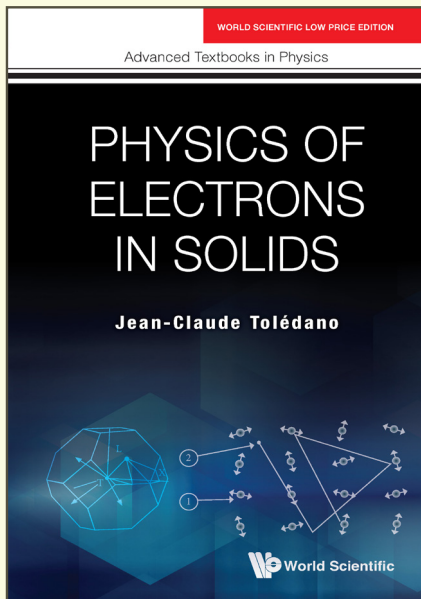


Physics of Electrons in Solids



By **Jean-Claude Tolédano**
(*École Polytechnique, France*)

ISBN	9798886131321
Extent	388pp
Binding	Paperback
Year	2025
Price	Rs. 1595

ABOUT THE BOOK

Primarily aiming to give undergraduate students an introduction to solid state physics, *Physics of Electrons in Solids* explains the properties of solids through the study of non-interacting electrons in solids. While each chapter contains a qualitative introduction to the main ideas behind solid state physics, it also provides detailed calculations of utmost importance to graduate students.

The introductory chapters contain crystallographic and quantum prerequisites. The central chapters are devoted to the quantum states of an independent electron in a crystal and to the equilibrium properties of conductors, insulators, and semiconductors. The final chapters contain insights into the assumptions made throughout, briefly describing the origin of ferromagnetism and superconductivity. The book ends with exercises and solutions based on a physics course taught by the author at *École Polytechnique*.

READERSHIP

Will be of value to any physics department, particularly those with courses on: Introduction to Solid State Physics; Introduction to Semiconductor Physics; Introduction to Crystallography. Will be of value in a secondary market of Research Centres in Material Science, Semiconductors and Electronic Devices.

CONTENTS

- Solids as Quantum Systems
- The Crystalline Order
- The Reciprocal Space as a Space of Quantum Numbers
- The Reciprocal Space as a Space of Diffraction Patterns
- Quantum States of an Electron in a Crystal
- Equilibrium Electronic Properties of Solids

- The Dynamics of Electrons in a Crystal
- Electronic Transport Properties of Solids
- Intrinsic and Doped Semiconductors
- Solids as Systems of Particles in Interaction
- Ferromagnetism and Superconductivity
- Appendices:
 - Exercises
 - Solutions of Exercises
 - Constants Values

ABOUT THE AUTHOR

Professor Jean-Claude Tolédano was a research scientist at the National Center for Research in Telecommunications, and (retired) Professor in Physics at École Polytechnique and Guest Professor in the departments of physics at the University of Illinois, the University of Nijmegen and the University of Porto. His research is in various fields of solid state physics, mainly on the phase transformations in crystalline solids, but also on the mechanism of growth of crystals and on high T_c superconductors.

He is a Laureate of Prizes of the French Academy of Sciences and of the French Telecommunication Association. Author of about 100 research papers and of several books: *The Landau Theory of Phase Transitions* (with Pierre Toledano, World Scientific 1987), *Symmetries and Microscopic Physics* (with J P Blaizot, French, Editor Ellipse 1997) and *Physical Basis of Plasticity in Solids* (World Scientific 2012).

For orders and enquiries, please contact us:



FEELBOOKS PVT. LTD.

DELHI	4381/4 Ansari Road, Daryaganj, New Delhi 110002	Tel: +91-11-47472630
	Pushendra Kumar	Email: orders@feelbooks.in
	Mobile: +91 9015043442	
BENGALURU	C-22, Brigade MM, KR Road, Jayanagar 7th Block, Bengaluru 560070	Tel: +91-80-26762129
	Shekar Reddy	Email: bangalore@feelbooks.in
	Mobile: +91 9945234476	
MUMBAI	Vijay Kumar	Email: vkumar@feelbooks.in
CHENNAI	G Srinivasan	Email: gsrinivasan@feelbooks.in
	Mobile: +91 9003047502	
KOLKATA	Dhrubajyoti Bhattacharjee	Email: dbhattacharjee@feelbooks.in
HYDERABAD	K.S.Vishwanath	Email: kvishwanath@feelbooks.in
	Mobile: +91 9871745850	

For Catalogues & title lists: marketing@feelbooks.in



For any queries, please email us at marketing@feelbooks.in