



Fundamentals of Thermoelectricity

By Kamran Behnia

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What kind of information on the electrons' organisation in solids is yielded by measuring their thermoelectric response? Fundamentals of Thermoelectricity gives an account of our current understanding of thermoelectric phenomena in solids by presenting basic theoretical concepts and numerous experimental results. Many readers will be surprised to learn that even in the case of simple metals (considered to be domesticated long ago by the quantum theory of solids) our understanding lags far behind known experimental facts. The two theories of phonon drag, the positive Seebeck coefficient of noble metals, and the three-orders-of-magnitude gap between theory and experiment regarding the thermoelectric response of Bogoliubov quasi-particles of a superconductor are among the forgotten puzzles discussed in this book. Among other novelties, it contains an original discussion of the role of the de Broglie thermal wave-length in setting the magnitude of the thermoelectric response in Fermi liquids.

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Editorial Review

Review

This new volume clearly explains the fundamental principles and richly illustrates these ideas with numerous detailed examples. It is easily the best book on the subject. * Stephen J. Blundell, *Contemporary Physics* *

While thermoelectricity is one of the oldest topics known in condensed matter physics and materials science, investigation of thermoelectric phenomena is a very active research frontier for both fundamental understanding and applications. Kamran Behnia's book comes in as an excellent modern textbook, balancing both theoretical description and experimental surveys for this ever progressing and exciting scientific field *

Philip Kim, Harvard University *

About the Author

Kamran Behnia, *Senior Researcher (Directeur de Recherche), ESPCI, Paris*

Kamran Behnia grew up in Tehran and witnessed the revolution of 1979, and the repression which followed it. He became a political refugee in France in the middle of the 1980s and obtained a PhD from Paris-Sud University in 1990. After a postdoctoral stay at the University of Geneva, he was employed in 1992 by the Centre National de la Recherche Scientifique (CNRS) as a junior researcher in the Laboratoire de Physique des Solides at Orsay, near Paris. He moved to his current institution (ESPCI) in 2000 and has been doing research there since. He is an experimentalist interested in the collective behaviour of electrons, and in particular in the way they carry heat and charge.

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Molly Edwards:

This Fundamentals of Thermoelectricity book is just not ordinary book, you have after that it the world is in your hands. The benefit you receive by reading this book is actually information inside this e-book incredible fresh, you will get information which is getting deeper anyone read a lot of information you will get. That Fundamentals of Thermoelectricity without we realize teach the one who reading through it become critical in contemplating and analyzing. Don't become worry Fundamentals of Thermoelectricity can bring when you are and not make your carrier space or bookshelves' come to be full because you can have it in the lovely laptop even cell phone. This Fundamentals of Thermoelectricity having great arrangement in word along with layout, so you will not feel uninterested in reading.

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