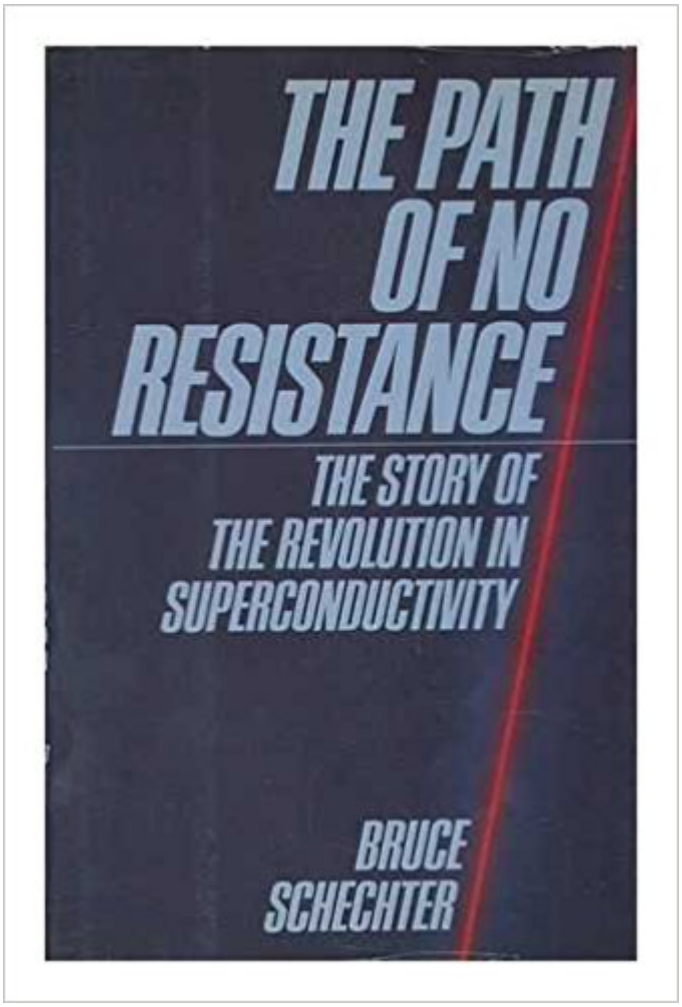
The Path Of No Resistance: The Story Of The Revolution In Superconductivity



Synopsis

Since 1987, stories about superconductivity have regularly appeared on the front pages of newspapers. A breakthrough by two physicists at IBM’s Zurich laboratory suddenly transformed what had long been considered an unrewarding backwater of physics into a glamorous and trendy scienrific frontier. A stunning series of discoveries followed that promised to propel the world into a science-fiction future of flying trains, cheap energy and lightning-fast computers. In record time, the IBM physicists received the Nobel Prize. This is the story of what has been called the most important scientific discovery of the last 20 years. The author interviews important figures in the rapidly developing and intensely competitive field of high-temperature superconductivity. Schechter also analyzes the conflicting US and Japanese commercial interests in the new technology, which promises to be an arena for internaitonal economic comptetition. Bruce Schechter has written for "Discover" magazine, "Technology Illustrated" and "Physics Today".

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Customer Reviews

Just three short years before this book was published, scientists were storming a ballroom at the New York Hilton to get an earful about (comparatively) high-temperature superconductivity, an event recalled as "the Woodstock of physics." But by the time this book was published, not much more was being heard about it.The reason is that high-temperature superconductivity is unlikely ever to affect our daily lives. Ignorant reporters and inexperienced researchers combined to create 1987’s firestorm of publicity about superconductors. In "The Path of No Resistance," Bruce Schechter

quotes an IBM researcher as saying, "I can’t believe we were saying the things we were saying."The barrier to, let’s say, fast trains levitating across the country on superconducting magnets could have been discovered by consulting any materials engineer: So far, all high-temperature superconductors are fragile ceramics; while they perform astounding tricks when they are the size of a pencil eraser, they cannot be made large enough to do useful work.(The magnetic levitation trains of Japan and West Germany use familiar, ultra-low temperature superconductors, metals that have great strength.)But while high-temperature superconductors are not going to become any more familiar around the house than lasers (which by the 21st century had achieved one important and two minor consumer uses), the brief, gaudy public career of superconduction does bring into focus a number of important topics.Amid all the arguments about directing research -- should we use the Japanese way? -- there arises the human factor: Scientists are hesitant to probe areas that are unfashionable. One of the discoverers of high-temperature superconduction, Alex Muller, was an IBM Fellow, free in principle to investigate any topic he liked. But even Muller pretended to be doing something else, to avoid scornful remarks of other scientists, who "knew" that high-temperature superconduction was "not serious."Schechter makes this point very well, then stumbles into a very common misconception that military research (which in the early ’90s got three out of five U.S. government scientific dollars) is done at the expense of "basic" research. In fact, some military research is pointless. Labels do not tell the story.Another aspect of the sociology of science involves you, the reader of this review, Schechter points out that the invention of the transistor was covered by The New York Times in 1948 in four and a half inches of type in the radio news column. We expect more from our scientists and our reporters these days, and we get more bulk. Whether the quality has also improved is doubtful: preposterous stories about Iraq’s "Doomsday gun" that were peddled around about the time of Gulf War I and the original publication of this book were a case in point.Schechter’s slim volume is good on the science and fairly good on the sociology, but somewhat uncritical in the anecdote department. He tells a story about Bernd Matthias, a superconducting pioneer who was a hot ticket in the physics world of the ’60s. According to Schechter, "One day he hopped into a taxi and the driver asked, ’Where to?’" ’Anywhere,’ Matthias replied. ’They all want me.’ "That story was more amusing, and almost believable, the first time I heard it, applied to Herbert von Karajan, a super conductor of a different sort.

This is a witty and interesting history of one of the more popularly known, if not as widely valued or understood, triumphs of modern science. The story behind this story is actually more interesting

than the story itself. That is, the people and events that lead to the breakthrough of higher-temperature superconductors are surprisingly human and, therefore, more easily appreciated by those of us who are not cryogenics physicists. The author has an engaging style and, but for a short section that slightly over-applauds the Japanese, recites the facts without ever lecturing.A really fun read for anyone who likes behind-the-scenes science books.

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High-Temperature Superconductivity: An Introduction