

## **Failed Theories of Superconductivity**

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Superconductivity is one of the most fascinating quantum states of matter. Almost half a century passed between the discovery of superconductivity by Kamerlingh Onnes and the theoretical explanation of the phenomenon by Bardeen, Cooper and Schrieffer (BCS). During the intervening years the brightest minds in theoretical physics tried and failed to develop a microscopic understanding of the effect. A summary of some of those unsuccessful attempts to understand superconductivity not only demonstrates the extraordinary achievement made by formulating the BCS theory, but also illustrates that mistakes are a natural and healthy part of scientific discourse, and that inapplicable, even incorrect theories can turn out to be interesting and inspiring.