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The Impact of the BCS Theory on 50 years of Superconductivity and Condensed Matter Physics

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The existence of supercurrents and of an energy gap in superconductors, known before 1957, was explained by Bardeen, Cooper and Schrieffer by proposing that electrons were paired through an interaction with phonons of the lattice of the material. These central ideas, a supercurrent of pairs, and a pairing interaction creating an energy gap, quickly became pervasive in experimental research in superconductivity, and over time had impact much more broadly in condensed-matter physics and beyond. In this talk, I will attempt to illustrate the influence of these ideas, by choosing experiments that I was either involved in exploring, or that appeal to me because of their novelty.