

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Moving Beyond Quantum Mechanics in Search for a Generalized Theory of Superconductivity GODFREY AKPOJOTOR, Delta State University, ALEXANDER ANIMALU, International Centre for Basic Research — Though there are infinite number of theories currently in the literature in the search for a generalized theory of superconductivity (SC), there may be three domineering mechanisms for the Cooper pair formation (CPF) and their emergent theories of SC. Two of these mechanisms, electron-phonon interactions and electron-electron correlations which are based on the quantum theory axiom of action-at-a distance, may be only an approximation of the third mechanism which is contact interaction of the wavepackets of the two electrons forming the Cooper pair as envisaged in hadronic mechanics to be responsible for natural bonding of elements. The application of this hydronic –type interaction to the superconducting cuprates, iron based compounds and heavy fermions leads to interesting results. It is therefore suggested that the future of the search for the theory of SC may be considered from this natural possible bonding that at short distances, the CPF is by a non-linear, nonlocal and nonhamiltonian strong hadronic-type interactions due to deep wave-overlapping of spinning particles leading to Hulthen potential that is attractive between two electrons in singlet couplings while at large distances the CPF is by superexchange interaction which is purely a quantum mechanical affairs.

Godfrey Akpojotor
Delta State University

Date submitted: 12 Nov 2011

Electronic form version 1.4