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## A Variational Wave Function for Electrons coupled to Acoustic Phonons

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We survey briefly the electron-phonon interactions in metals with an emphasis on applications in electronphonon mediated superconductivity. While BCS theory and Eliashberg theory have significant predictive power, the microscopic Hamiltonians for the processes they describe are still an open area of study. We will examine the hitherto unsolved BLF-SSH model of electrons interacting with acoustical phonons and present a novel variational wave function for the solution of this model. We examine the validity of this variational wave function across applicable parameter regimes.

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