

Tight-binding Calculation of the Tunneling Spectra of the 122 type iron-based Superconductors in Normal State

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Abstract. In order to describe the experimentally observed tunneling spectra of the 122 type iron-based superconducting systems, we have proposed here a tight-binding model calculation based upon one band model. We have considered electron hoppings upto second nearest neighbors as well as Heisenberg type spin-spin interaction upto second nearest neighbors. The magnetic interaction is considered within Hartree-Fock mean-field approximation and the temperature dependent spin density wave (SDW) gap is calculated by Zuvarev's Green's function technique. Finally the electron density of states (DOS) is computed numerically and its evolution is investigated by varying electron hoppings and the SDW couplings.

Keywords: Spin density wave (SDW), Scanning Tunneling Microscopy (STM)

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