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Tight Binding Model Study of the Electron Specific Heat of Manganese Oxides; $R_{1-x}A_xMnO_3$

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Abstract: We report here a tight binding model for colossal magneto-resistive (CMR) manganites which includes band Jahn-Teller (JT) distortion in conduction band and antiferromagnetic (AFM) Heisenberg interaction in core band in presence of usual Kubo-Ohata type double exchange (DE) model. The Hamiltonian is solved using Zubarev's Green's function technique and the interplay between lattice strain and AFM parameter is studied. Two jumps appear in the temperature dependent specific heat as observed in experiments.

Keywords: Colossal magneto-resistance; Jahn-Teller effect; Magnetization

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[Full Paper]