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An Investigation of c-axis Charge Transport in Double Layer Cuprate

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Taschenbuch. Book Condition: Neu. 220x150x5 mm. This item is printed on demand - Print on Demand Neuware - In this book we have studied the out-of-plane, c-axis resistivity, $c(T)$, of Ca doped $Y(Ca)Ba_2Cu_3O_{7-x}$ high- T_c superconductors (cuprates). Our aim was to model the c-axis resistivity by considering the full impact of the pseudogap (PG) in the electronic density of states (EDOS) in cuprates and to understand the role of the k (wave vector) on hopping integral along the c-direction. We have used the formalism developed by T. Xiang et al. (Phys. Rev. B 73, 134510 (2006)) to fit the experimental resistivity data for high quality single crystals of $Y(Ca)Ba_2Cu_3O_{7-x}$ over a wide range of hole content in the CuO_2 plane, p . We have found systematic behavior of maximum pseudogap energy scale, Δ , with doping. It is also found that the coefficient, c , determining the extent of linearity of $c(T)$ is also strongly p -dependent. The analysis also reveals that the formalism developed by T. Xiang et al., fails to produce reliable estimates of Δ and c for the overdoped compounds. The extrapolated values of Δ tends to vanish at $p \sim 0.2$. We have discussed the...



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