

High-Temperature Superconductivity

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June 4, 2015

ABSTRACT: Since nearly thirty years high-temperature superconductivity has caught the imagination of physicists and non-physicists alike. Nevertheless, no clear understanding which kind of interaction generates the electron pairs in this case has been reached. In my talk I will review the crystal structure of the cuprate-oxides and discuss the phase-diagram of the parent compounds and of hole-doped high- T_c superconductors. Further, I will introduce a group of simple models for electron correlations: the Hubbard, the t-J and the Heisenberg model. Finally, an overview of current experimental results and open questions will be presented and some proposed explanatory models will be sketched.