第 505 回物性セミナー

The unconventional nature of the high-Tc superconducting ground state :Evidence from tunneling and ARPES

講　師：　Prof. William Sacks （ソルボンヌ大学）

日　時：　2017 年 5 月 12 日（金） 14:30-15:30

場　所：　理学研究科 C212

A key feature of high-Tc superconductivity (SC) is that the excitation gap cannot be the order parameteras would be expected from BCS basic principles.

Indeed, the spectral gap magnitude Δp remains remarkably constant as a function of temperature up to Tc, the pseudogap (PG) state, but also within the vortex core, where SC coherence is lost.

In this work we consider this fundamental paradox in light of the pair-pair interaction (PPI) model. We discuss the origin of the pre-formed Cooper pairs, leading to a 'Cooper-pair glass', and the mechanism of their condensation to the SC state, which follows Bose-Einstein statistics.

The order parameter that vanishes at Tc is not the pair binding-energy but rather the mutual pair-pair interaction (PPI), resolving the paradox of the excitation gap. Moreover, the model provides a simple explanation for the phase diagram as a function of carrier concentration (p), in particular the Tc(p) dome.

Throughout the presentation, we discuss a wide variety of tunneling and ARPES experiments, as a function of temperature, magnetic field and doping, having important theoretical implications.

5 研究科共同セミナーの認定科目です

担当：　圓山　裕

【世話人】
高根　美武（内 7653）　浴野　稔一（内 6552）
松村　武（内 7021）　木村　昭夫（内 7471）
犬丸　　啓（内 7741）
【広報担当】
稲垣（内 5720）