Session 22bB

Transport and Optical Study of the Competition between Stripe and Superconducting Orders in La-214 Cuprates **22bB1**

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We have investigated the Hall coefficient (R_H) and the c-axis optical spectrum of $La_{2-x-y}Nd_ySr_xCuO_4$ by applying various perturbations to this system, magnetic field, Zn-impurity doping, changing the Nd content, and applying pressures. The suppression of R_H and the reduction of the c-axis Josephson plasma frequency are most remarkable phenomena observable when the stripe order overwhelms the superconducting order. It is found that pressure which exert the in-plane strain most effectively control the competition between these two orders.

Superconductivity Induced Transfer of Spectral Weight in $Bi_2Sr_2CaCu_2O_{8+\delta}$ **22bB2**

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Optical data are reported of a spectral weight transfer over a broad frequency range of $Bi_2Sr_2CaCu_2O_{8+\delta}$ when this material becomes superconducting. Using spectroscopic ellipsometry, we observe the removal of a small amount of spectral weight in a broad frequency band from $10^4 cm^{-1}$ to at least $2*10^4 cm^{-1}$, due to the onset of superconductivity. We observe a blue-shift of the ab-plane plasma frequency when the material becomes superconducting, indicating that the spectral weight is transferred to the infrared range. Our observations are in agreement with models where superconductivity is accompanied by a decrease of the in-plane kinetic energy of the charge carriers.

22bB3 Phase diagram of cuprates derived from the Nernst effect

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Measurements of the Nernst signal in the vortex-liquid state of several cuprates families reveal that vorticity extends to very high fields (30 T) even close to the zero-field critical temperature T_{c0}. The upper critical field H_{c2}, derived from the vortex line-entropy, does not end at T_{c0}, but at a much higher temperature. These results imply that T_{c0} corresponds to a loss in phase rigidity rather than a vanishing of the pairing amplitude.