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Extraction of normal and pairing self-energies and Eliashberg functions of high temperature superconductor Bi2212 from Laser-based ARPES experiment[1] JIN MO BOK, National Laboratory for Superconductivity, Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Science, SEUNG HWAN HONG, JONG JU BAE, HAN-YONG CHOI, Department of Physics and Institute for Basic Science Research, SungKyunKwan University, CHANDRA M. VARMA, Department of Physics and Astronomy, University of California, Riverside, WENTAO ZHANG, JUNFENG HE, YUXIAO ZHANG, LI YU, X.J. ZHOU, National Laboratory for Superconductivity, Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Science — The angle-resolved photoemission (ARPES) measurements provide momentum and frequency dependence of the electronic structure that enables quantitative analysis using single particle Green's function. This is particularly important for studying the cuprate superconductors that are known to have anisotropic electronic structure and anisotropic d-wave superconducting gap. Here we report the extraction of the normal and pairing self-energies from high resolution Laser-based ARPES data of the underdoped and overdoped Bi2212. We also obtain the Eliashberg functions, $\mathcal{E}_{\rm N}$ and $\mathcal{E}_{\rm P}$, by inverting Eliashberg equations using maximum entropy method. Implications of these results for understanding the superconductivity mechanism will be discussed.

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Jin Mo Bok
Chinese Academy of Sci (CAS)

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