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Phase competition in trisected superconducting dome INNA VISHIK, Stanford University, M. HASHIMOTO, Stanford Synchrotron Radiation Lightsource, R.-H. HE, Advanced Light Source, Lawrence Berkeley National Lab, W.-S. LEE, F. SCHMITT, Stanford University, D.-H. LU, R.G. MOORE, Stanford Synchrotron Radiation Lightsource, C. ZHANG, Shandong University, W. MEEVASANA, Suranaree University of Technology, T. SASAGAWA, Tokyo Institute of Technology, S. UCHIDA, University of Tokyo, K. FUJITA, Cornell University, S. ISHIDA, University of Tokyo, M. ISHIKADO, Japan Atomic Energy Agency, Y. YOSHIDA, H. EISAKI, Nanoelectronics Research Institute, Z. HUSSAIN, Advanced Light Source, Lawrence Berkeley National Lab, T.P. DEVEREAUX, Z.-X. SHEN, Stanford University — Angle resolved photoemission spectroscopy (ARPES) has been used to distinguish between quantum phases in the cuprates, particularly superconductivity and the pseudogap, based on their distinct spectroscopic phenomenology–temperature, doping, and momentum dependence. We present laser-ARPES experiments showing evidence for three distinct phases comprising the superconducting ground state in $Bi_2Sr_2CaCu_2O_{8+\delta}$ (Bi-2212), accompanied by abrupt changes at p≈0.076 and p≈0.19 in the phenomenology of the superconducting gap near the bond-diagonal (nodal) direction. The latter likely marks the quantum critical point of the pseudogap, while the former may indicate a distinct competing phase at low doping. Temperature dependence studies of energy gaps provide further support for this characterization, and additionally present evidence that the pseudogap is not static below T_c.

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