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Photodoping of Effects in Heavily Underdoped $Bi_2Sr_2CaCu_2O_{8+x}$ Revealed by Time and Angle Resolved Photoemission Spectroscopy[1] J.D. RAMEAU, Brookhaven National Lab, S. FREUTEL, Center for Nanointegration, Duisburg-Essen University, Germany, L. RETTIG, Paul Scherrer Institute, ISABELLA AVIGO, M. LIGGES, Center for Nanointegration, Duisburg-Essen University, Germany, Y. YOSHIDA, H. EISAKI, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan, J. SCHNEELOCH, R.D. ZHONG, X.J. XU, G.D. GU, P.D. JOHNSON, Brookhaven National Lab, UWE BOVENSIEPEN, Center for Nanointegration, Duisburg-Essen University, Germany — While in the last several years great strides have been made in the use of ultrafast optical excitation to induce non-equilibrium effects in the superconducting state of cuprate high Tc superconductors, less attention has been paid to what such pump-probe experiments might reveal about the equilibrium properties of these materials, particularly in their normal states. Recently we have investigated the non-equilibrium properties of the normal state of optimally doped ($T_c = 91$ K) $Bi_2Sr_2CaCu_2O_{8+x}$ (Bi2212) using time and angle resolved photoelectron spectroscopy (trARPES). This effort revealed a pump-induced modification of the nodal mass renormalization at 70 meV as well as a longer-lived photodoping effect. Building on this work, we will present further findings related to the photodoping effect as it is manifested in the normal state of heavily underdoped ($T_c = 50$ K) Bi2212.

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Jonathan Rameau
Brookhaven National Lab

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