

Abstract Submitted  
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**ARPES study of  $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$  from the over to the underdoped regime by in situ K evaporation** G. LEVY, DAVID FOURNIER, M.A. HOSSAIN, J.D.F. MOTTERSHEAD, UBC, J.L. MCCHEYNEY, A. BOSTWICK, E. ROTENBERG, ALS, W.N. HARDY, R. LIANG, G.A. SAWATZKY, I.S. ELFI-MOV, D.A. BONN, A. DAMASCELLI, UBC — Unravelling the nature of the electronic excitations in the underdoped regime of the Cuprates is a key element for understanding the fundamental mechanism behind HTSC. The YBCO phase diagram has been studied with photoelectron spectroscopy (ARPES) using a new in situ electron doping approach based on controlled potassium deposition [1] onto as-cleaved samples. All of the compounds studied ( $\delta=0,0.5,0.66$ ) exhibit heavily over-doped nature with well defined LDA-like Fermi surfaces and evolve toward disconnected Fermi arcs in the underdoped regime. These results are consistent with previous ARPES measurement on the HTSCs and in contrast with the quantum oscillations observations [2].

[1] M. A. Hossain et al., *Nat. Phys.*, 4:527, 2008

[2] N. Doiron et al., *Nature*, 447:565, 2007

David Fournier  
University of British Columbia

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