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Universal critical behavior in single crystals and films of $YBa_2Cu_3O_{7-\delta}$[1] STEVEN M. ANLAGE, CNAM, Physics Dept., University of Maryland, HUA XU, NIST Gaithersburg, SU LI, C.J. LOBB, CNAM, University of Maryland, M.C. SULLIVAN, Ithaca College, KOUJI SEGAWA, YOICHI ANDO, Osaka University — We studied the normal-to-superconducting phase transition in optimally-doped $YBa_2Cu_3O_{7-\delta}$ in zero external magnetic field using a variety of different samples and techniques [1]. Using DC transport measurements, we find that the dynamical critical exponent $z = 1.54 \pm 0.14$, and the static critical exponent $\nu = 0.66 \pm 0.10$ for both films (when finite-thickness effects are included in the data analysis) and single crystals (where finite-thickness effects are unimportant). We also measured thin films at different microwave frequencies and powers (as well as DC), which allowed us to systematically probe different length scales to avoid finite-thickness effects. These microwave and DC measurements yielded a value of z consistent with the other results, $z = 1.55 \pm 0.15$. The neglect of finite-thickness, finite-current, and finite-frequency effects may account for the wide ranges of values for ν and $z$previously reported in the literature.

[1] Hua Xu, *et al.*, Phys. Rev. B 80 104518 (2009). (http://link.aps.org/doi/10.1103/PhysRevB.80.104518)

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