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c-axis resistivity, pseudogap, superconductivity and Widom line in doped Mott insulators GIOVANNI SORDI, Institut Laue-Langevin, Grenoble, France, PATRICK SEMON, Universite de Sherbrooke, K. HAULE, Rutgers University, A.-M. S. TREMBLAY, Universite de Sherbrooke and Canadian Institute for Advanced Research — Layered doped Mott insulators, such as the cuprates, show unusual temperature dependence of the resistivity. We calculate the c-axis resistivity ρ_c for the two-dimensional Hubbard model within plaquette cellular dynamical mean-field theory. The temperature and doping dependencies of ρ_c are controlled by the first-order transition between pseudogap and correlated metal phases from which superconductivity can emerge. On the large doping side of the transition $\rho_c(T)$ is metallic, while on the low-doping side $\rho_c(T)$ changes from metallic to semiconducting behavior with decreasing T. As a function of doping, the jump in ρ_c across the first-order transition evolves into a sharp crossover at higher temperatures. This crossover coincides with the pseudogap temperature T^* in the single-particle density of states, the spin susceptibility and other observables. Such coincidence in crossovers is expected along the continuation of the first-order transition into the supercritical regime, called the Widom line. This implies that not only the dynamic and the thermodynamic properties but also the DC transport in the normal state are governed by the hidden first-order transition. Refs: G. Sordi et al, Sci. Rep. 2, 547 (2012); G.Sordi et al, arXiv:1211.1702 (2012)

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