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Pseudogap critical point inside the superconducting phase of cuprates B. MICHON, S. LI, P. BOURGEOIS-HOPE, S. BADOUX, N. DOIRON-LEYRAUD, L. TAILLEFER, University of Sherbrooke, Sherbrooke, Canada, J. ZHOU, University of Texas, Austin, USA — Recent high-field measurements of electrical transport in cuprates have revealed a new signature of the critical point p* where the pseudogap phase ends at T=0 in the absence of superconductivity: the carrier density drops abruptly from n=1+p above p* to n=p below [1,2,3]. Two questions arise: 1) Is the ground state of the pseudogap phase truly a metal, given the large upturn in the resistivity as low T, dubbed a metal-to-insulator crossover? 2) Is p* present inside the superconducting phase in zero field? Here we report low-temperature measurements of thermal conductivity in the cuprate superconductor Nd-LSCO for dopings across p*. We obtain the residual linear term at T=0, κ_0/T, as a function of magnetic field and doping. At high fields, we find that κ_0/T satisfies the Wiedemann-Franz law at all dopings. This shows that the ground state of the pseudogap phase is a metal, and p* corresponds to a metal-to-metal transition at T=0. In zero field, a very similar drop in κ_0/T across p* is observed, showing that p* is present in zero field inside the superconducting phase.

[1] S. Badoux *et al.*, Nature **531**, 210 (2016)
[2] F. Laliberté *et al.*, arXiv:1606.04491 (2016)
[3] C. Collignon *et al.*, arXiv:1607.05693 (2016)

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