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Universal quantum oscillations in the underdoped cuprate superconductors[1] NEVEN BARISIC, Technical University of Vienna, Austria, SVEN BADOUX, LNCMI, Toulouse, France, MUN K. CHAN, CHELSEY DOROW, University of Minnesota, Minneapolis, Minnesota, USA, WOJCIECH TABIS, BAPTISTE VIGNOLLE, LNCMI, Toulouse, France, GUICHUAN YU, University of Minnesota, Minneapolis, Minnesota, USA, JEROME BEARD, LNCMI, Toulouse, France, XUDONG ZHAO, Jilin University, Changchun, China, CYRIL PROUST, LNCMI, Toulouse, France, MARTIN GREVEN, University of Minnesota, Minneapolis, Minnesota, USA — The observations of a very small pocket (covering only $\sim 2\%$ of the Brillouin zone (BZ)) for underdoped Y123 and Y124 are in stark contrast to the situation at high hole concentrations, where a large Fermi surface (FS) is observed (corresponding to $\sim 65\%$ of the BZ. While this result can been taken as evidence for a dramatic change of the FS associated with the quintessential CuO_2 planes, it may also be attributed to the existence of a non-universal FS piece related to the CuO chains. Consequently, it has remained a pivotal open question whether the FS reconstruction has anything to do with aspects of the unidirectional structures, or if it is a universal property of the cuprates. We have settled this issue through the observation of quantum oscillations in the magnetorestivity of a simple tetragonal compound Hg1201 at p$\approx$0.09 in pulsed magnetic fields of up to 80 T. The pocket appear approximately in the same doping, temperature and magnetic field range of the phase diagram as in the case of Y123, with a very similar effective mass and comparable cyclotron frequency. (Nat. Phys., doi:10.1038/nphys2792)

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Neven Barisic
Technical University of Vienna, Austria

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