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dHvA studies of the Fermi topology of Iron-based Superconductors and Metals[1]

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Quantum oscillations studies on various non-magnetic iron pnictides reveal a Fermi surface in broad agreement with the details of the band structure calculations and moderate enhancement of the electronic correlations [1,2,3,4]. Whether or not the nesting of the electron and hole bands are essential for explaining the superconducting behaviour in these materials is still under debate but it is becoming clear that structural alteration have a significant effect in determining their electronic properties. In this talk I will present quantum oscillations studies in materials in which the Fermi surface suffers major topological changes. I will discuss the effect of isoelectronic substitution and doping on the Fermi surface and the quasiparticle masses and their relevance for understanding the complex physics of these materials. This work is in collaboration with groups at Bristol University, Stanford University and Kyoto University [1,2,3,4] and experiments were performed at high magnetic field facilities in Tallahassee, Nijmegen and Toulouse.

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