

## Evidence for Dirac-like excitations in SrFe<sub>2</sub>As<sub>2</sub> from Quantum Oscillation Experiments

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The antiferromagnetic parent compounds of the high  $T_c$  pnictide superconductors play host to unusual magnetic and electronic properties which may be closely related to the presence of superconductivity in the doped compounds. Recent theoretical<sup>1</sup> and experimental<sup>2</sup> work have suggested the presence of small Fermi-surface pockets in these compounds with regions in k-space characterized by a Dirac-like dispersion. Here we test this scenario by performing quantum oscillation studies on high quality single crystal samples of SrFe<sub>2</sub>As<sub>2</sub> to 60 T in pulsed magnetic fields. By tracking the ratio of the quasiparticle effective mass  $m^*$  to the quantum oscillation frequency as a function of magnetic field angle, we observe a dependence consistent with that expected for the Dirac dispersion scenario. We discuss the implications of this result on understanding the metallic state of the FeAs parent compounds.

<sup>1</sup>N. Harrison and SE Sebastian, Phys. Rev. B. **80**, 224512 (2009).

<sup>2</sup>P. Richard P, K. Nakayama, T. Sato *et. al.*, Phys. Rev. Lett. **104**, 137001 (2010).