

Abstract Submitted
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Quantum Oscillations in the parent pnictide BaFe₂As₂: Fermi surface reconstruction of the magnetic ground state¹ JAMES ANALYTIS, Stanford Linear Accelerator Center, JIUN-HAW CHU, IAN FIRSHER, Stanford University, ROSS MCDONALD, Los Alamos National Laboratory, IGOR MAZIN, Naval Research Lab, ROSS MCDONALD COLLABORATION — We have measured quantum oscillations in the magnetically ordered ground state of BaFe₂As₂, a parent compound of the superconducting ternary pnictides. Measurements were performed in 65T pulsed field at the Los Alamos National High Magnetic Field Laboratory, using an atomic force microscope torque cantilever. We also perform detailed band-structure calculations for the spin-density wave ground state and find agreement with our observations of small quasi-two dimensional pockets. These results place significant constraints on our understanding of the magnetism associated with the Fe-As layers and demonstrates that coherent quasiparticles persist in the magnetic ground state, providing an important clue about the nature of superconductivity which emerges when this compound is doped.

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