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**The role of  $f$ -electrons at the Fermi surface of the heavy fermion superconductor  $\beta$ -YbAlB<sub>4</sub>** EOIN O'FARRELL, D.A. TOMPSETT, S.E. SEBASTIAN, Cavendish Laboratory, University of Cambridge, N. HARRISON, NHMFL, MS-E536, Los Alamos National Laboratory, C. CAPAN, Department of Physics and Astronomy, University of California, Irvine, L. BALICAS, NHMFL, Tallahassee, K. KUGA, T. MATSUO, M. TOMONAGA, S. NAKATSUJI, ISSP, University of Tokyo, G. CSÁNYI, Department of Engineering, University of Cambridge, Z. FISK, Department of Physics and Astronomy, University of California, Irvine, M.L. SUTHERLAND, Cavendish Laboratory, University of Cambridge — We present a detailed quantum oscillation study of the fermi surface of the recently discovered Yb-based heavy fermion superconductor  $\beta$ -YbAlB<sub>4</sub>. We compare the data, obtained at fields from 10 to 45 Tesla, to band structure calculations performed using the local density approximation. Analysis of the data suggests that the  $f$ -electrons are delocalized and contribute to the fermi volume at all fields. We comment on the significance of these findings for the observed quantum critical and superconducting properties of this material.

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