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dHvA measurements of the Fermi surface of LiFeP and its relation to the nodal gap structure A. CARRINGTON, C. PUTZKE, I. GUILLAMÒN, University of Bristol, A.I. COLDEA, M.D. WATSON, University of Oxford, D. VIGNOLLES, D. LEBOEUF, LNCMI-Toulouse, A. MCCOLLAM, HMFL-Nijmegen, I.I. MAZIN, NRL-Washington, S. KASAHARA, T. TERASHIMA, T. SHIBAUCHI, Y. MATSUDA, Kyoto University — The iron-pnictides are highly unusual in that there appears to be considerable variation in the structure of the superconducting gap across the different materials. The 111 compounds, LiFeX (X=As, P) superconduct at ambient pressure in their undoped stoichiometric form. LiFeP ((T_c==5K) was found to have superconducting gap nodes whereas LiFeAs (T_c=17K) does not. Linking these differences in gap structure to Fermi surface features could provide a key test of microscopic theories which seek to explain superconductivity in iron pnictides. Here we report de Haas-van Alphen effect data which determine, almost completely, the *bulk* Fermi surface of LiFeP. The topology of the Fermi surface, which consists of quasi nested electron and hole sheets, is in good agreement with DFT band structure calculations when allowance for small band energy shifts is made. We find that one hole sheet has a anomalously small mass enhancement (compared to the others) which suggest it interacts weakly. This is probably because of its mixed orbital character rather than for any geometrical reason. We suggest that this could be the driver for node formation in this material.

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