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de Haas-van Alphen study of the Fermi Surface of $Ce_xLa_{1-x}B_6$ as a function of composition: the evolution of field-dependent quasiparticle effective masses IZABELA MIHUT, JOHN SINGLETON, ALBERT MIGLIORI, National High Magnetic Filed Laboratory-LANL, Los Alamos, NM, LONG PHAM, Physics Department, University of California, Davis, CA, CIGDEM CAPAN, Physics Department, Louisiana State University, Baton Rouge, LA , ZACHARY FISK, Physics Department, University of California, Irvine, CA — The de Haas-van Alphen effect has been studied in single crystals of $Ce_xLa_{1-x}B_6$ ($0 \leq x \leq 0.075$) using pulsed magnetic fields of up to 60 T and temperatures 0.38 K $\leq T \leq$ 4.0 K. The low-field effective mass grows smoothly with increasing x.Moreover, for $x > 0$, the effective mass becomes a function of magnetic field, decreasing as the field rises. These results may be fitted using the extended Lifshitz-Kosevich formalism due to Wasserman, the decrease in mass reflecting the suppression of spin fluctuations by the field. The data also show that a previously-observed effect, attributed to complete spin polarization of one of the Fermi-surface sheets for $x \geq 0.05$, is in fact an artifact of the field-dependent mass, ignored in previous works.

Izabela Mihut
National High Magnetic Filed Laboratory-LANL

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