Fermi Surfaces of the Iron-Pnictides $LaFe_2P_2$ and $CeFe_2P_2$

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We report on a comprehensive study of the Fermi surfaces (FS) of the iron-pnictide compounds $LaFe_2P_2$ and $CeFe_2P_2$ by use of de Haas-van Alphen (dHvA) experiments and band-structure calculations. The dHvA data were gained using a capacitive torque cantilever in fields up to 18 T in Dresden and up to 32 T in Grenoble. The band-structure calculations were done fully relativistically in the framework of density-functional theory. For $LaFe_2P_2$, we find strongly corrugated quasi-two-dimensional (2D) FS sheets in addition to three-dimensional bands. The calculations can nicely explain most of the observed dHvA frequencies. For $CeFe_2P_2$, we find a much richer dHvA frequency spectrum with no 2D bands indicating that the Ce $4f$ electrons are of importance for the electronic band structure.