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Evolution of Fermi surface nesting of BaFe2(As1-xPx)2 revealed by de Haas-van Alphen effect JAMES ANALYTIS, Stanford Linear Accelerator center, JIUNHAW CHU, IAN FISHER, Stanford, ROSS MCDONALD, Los Alamos National Lab — The iron-pnictide superconductors are a new class of materials with unique superconducting and magnetic properties. Many theoretical frameworks describing these materials rely heavily on the nature of the size and topology of the Fermi surface. The classic method ofdetermining the Fermi surface is by looking at oscillations in the magnetization as a function of field. These oscillations, known as the de Haas-van Alphen effect, is extremely powerful in that it can determine the full three-dimensional topology of the FS, in addition to the quasiparticle renormalization to the effective mass. In the present study we measure the Fermi surface of the superconducting P-doped BaFe2As2. We are able to reveal the curvature of the electron pockets and the size and topology of a corresponding hole pocket, revealing a dramatic enhancement of the nesting for superconducting compounds, in contrast to the non-superconducting compounds.

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