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Fermi-liquid behavior of quasiparticle scattering in the normal state of $BaFe_2(As_{1-x}P_x)_2$[1] YING JIA, LEI FANG, ULRICH WELP, ALEXEI KOSHELEV, GEORGE CRABTREE, WAI-KWONG KWOK, Materials Science Division, Argonne National Laboratory, Argonne, IL 60439, USA — We present studies of the galvanomagnetic effects of compensated $BaFe_2(As_{1-x}P_x)_2$ (x=0.32∼0.6) superconductors. The magnetoresistance follows the relaxed Kohler's scaling for all doping levels. Using a two-band model, we quantitatively extracted the scattering parameter m^*/τ and the carrier density of the electron and hole bands. The temperature dependence of the carrier concentration reveals the semimetal properties of $BaFe_2(As_{1-x}P_x)_2$. The Fermi-liquid behavior, $m^*/\tau \sim T^2$, is observed from optimal doped x=0.32 to overdoped x=0.6 crystals, suggesting that the proximity of the SDW state does not play an important role in transport. Our analysis suggests that the normal state transport properties of $BaFe_2(As_{1-x}P_x)_2$ can be well understood in the framework of a compensated two-band Fermi-liquid semimetal.

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