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Transport behavior and quantum oscillation study of type-II Dirac semimetal VAl3 KEFENG WANG, LIMIN WANG, University of Maryland, D. GRAF, NHMFL, Florida State University, D CAMPBELL, J PAGLIONE, University of Maryland — We report high-quality single-crystal synthesis and characterization of the proposed type-II Dirac semimetal VAl3, reviewing transport experiments performed up to 34 T magnetic fields. Up to high fields, VAl3 exhibits an unsaturating magnetoresistance, with multiband behavior consistent with the coexistence of light holes and heavy electrons. We will review quantum oscillations measurements from torque magnetometry experiments and compare the Fermi surface geometry with electronic structure calculation, discussing two-dimensional behavior of a very small frequency oscillation that may be assigned to surface states in this Dirac semimetal.

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