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Coexistence of type II Dirac transport and anisotropic superconductivity in layered material $PdTe_2$ and improved possible topological superconductor FENGQI SONG, FUCONG FEI, Nanjing Univ — We demonstrate the coexistence of the type-II featured tilted Dirac cones and anisotropic superconductivity in a layered crystal $PdTe_2$ by the combined studies using the low-temperature transport, de Haas-van Alphen oscillations and the first-principles calculations. The superconductivity appears at 1.9K and the upper critical field when Ixc is 3 times larger than that when I-c. Six conductive pockets are identified in the dHvA measurements, where one mode with frequency of 8.0T exhibits the nontrivial Berry phase. Detailed band structure of $PdTe_2$ was analyzed by theory calculation which is consistent with the dHvA measurements and feature of the type-II Dirac fermions was confirmed. We consider type II Dirac semimetals are the optimized materials with topological superconductivity transport and $PdTe_2$ is an improved platform to produce the possible topological superconductor.

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