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Superconductivity in the topological semimetal YPtBi

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Superconductivity was recently discovered in the half Heusler compound YPtBi. Electrical resistivity and Hall data provide compelling evidence that supports the idea that band structure calculations are correct and that YPtBi is indeed a semimetal with nontrivial topology. The low-temperature superconductivity emerges from a remarkable normal state with an extremely low carrier density, no crystalline inversion symmetry, and strong band inversion. I will discuss the normal state properties of YPtBi and details of its superconducting state, and compare them to the characteristics of other potential topological superconductors. This research was performed at the University of Maryland, College Park in collaboration with Paul Syers, Kevin Kirshenbaum, Andrew P. Hope, and Johnpierre Paglione.