Title:	Unconventional superconductivity at mesoscopic point contacts on the 3D Dirac semimetal Cd3As2
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Abstract:	Three-dimensional (3D) Dirac semimetals exist close to topological phase boundaries which, in principle, should make it possible to drive them into exotic new phases, such as topological superconductivity, by breaking certain symmetries. A practical realization of this idea has, however, hitherto been lacking. Here we show that the mesoscopic point contacts between pure silver (Ag) and the 3D Dirac semimetal Cd3As2 (ref.) exhibit unconventional superconductivity with a critical temperature (onset) greater than 6 K whereas neither Cd3As2 nor Ag are superconductors. A gap amplitude of 6.5 meV is measured spectroscopically in this phase that varies weakly with temperature and survives up to a remarkably high temperature of 13 K, indicating the presence of a robust normal-state pseudogap. The observations indicate the emergence of a new unconventional superconducting phase that exists in a quantum mechanically confined region under a point contact between a Dirac semimetal and a normal metal.
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