

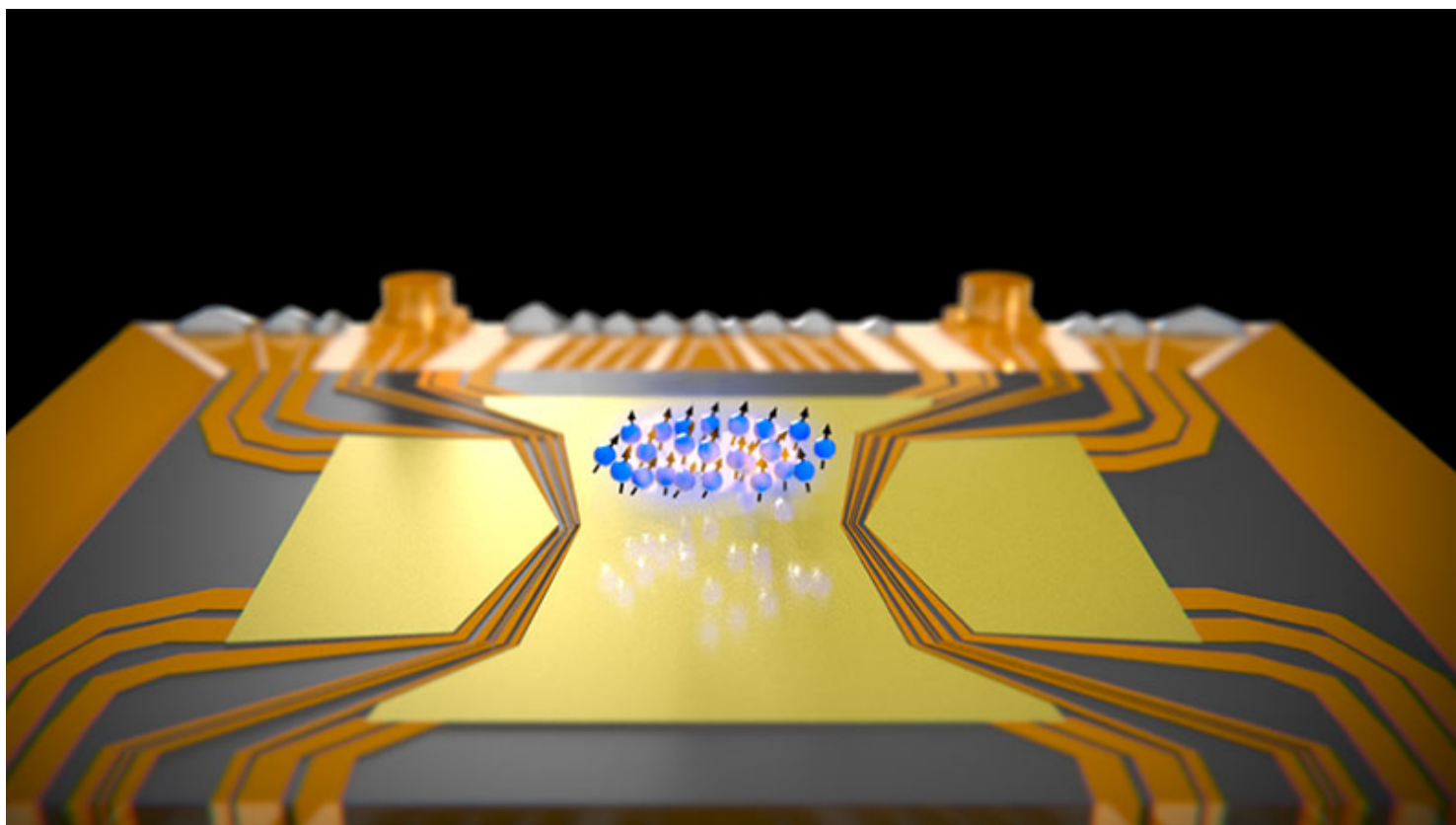
Science Ticker

Quantum Physics

Split atom clouds get entangled in quantum tests

The feat takes researchers a step closer to creating ultraprecise measurement devices

By Emily Conover 2:00PM, APRIL 26, 2018



ENTANGLED WEB Electromagnetic fields trap a cloud of rubidium atoms above a microchip (illustrated). Quantum linkages were observed between atoms in the left and right halves of the clump.

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Clouds of linked-up atoms are doing the splits.

Scientists forged quantum connections between separate regions within clouds of ultracold atoms, demonstrating entanglement between thousands of particles in two different locations. Previous similar experiments had entangled several thousand atoms, but only within one entire cloud (*SN Online*: 3/25/15).

Now researchers have split up a cloud of entangled atoms into separate regions, either by considering two areas in a single cloud to be distinct or by actually forming two separate clouds, according to a trio of papers (found here, here and here) published in the April 27 *Science*. The new technique is a step toward quantum devices that make precise measurements, for example of electric fields.

Entanglement is a bizarre quantum phenomenon where separate objects, whether individual particles or groups of particles, behave as a conjoined entity. Measuring one object immediately reveals information about the other, even when the two are in different locations, such as distinct atomic clouds.

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