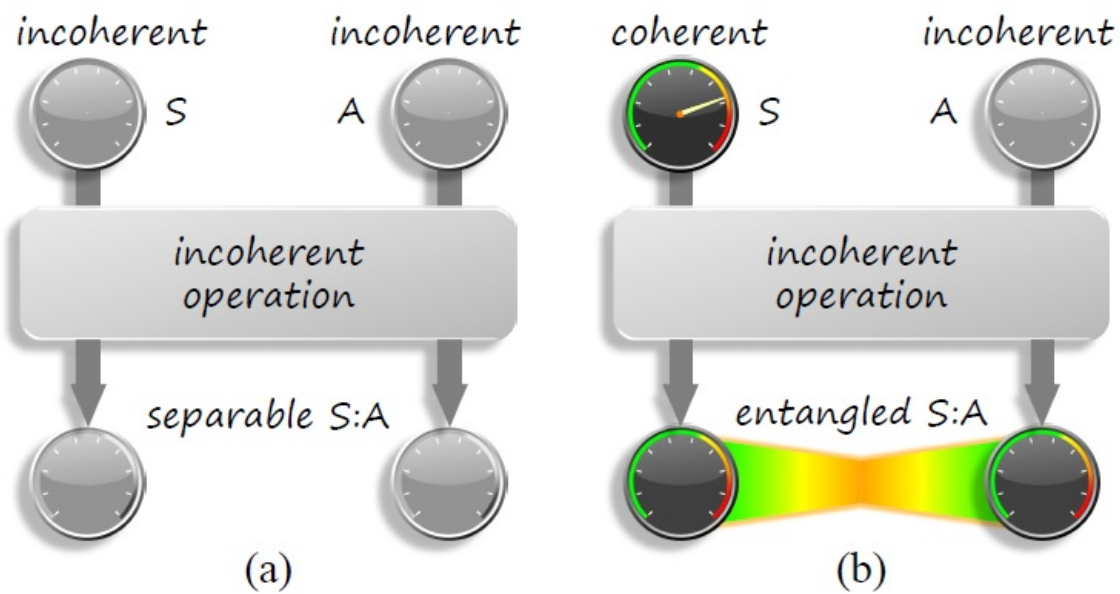


# Best of Last Week—Magnetic devils staircase, a skinlike display and conscious mind might be less in control than thought

June 29 2015, by Bob Yirka



(a) Input states that are fully incoherent (S and A) cannot be converted to entanglement via incoherent operations. (b) On the other hand, when the input state of S has any nonzero coherence, the coherence can be converted to entanglement via incoherent operations. The new results show that, in such a scenario, the input coherence and the output entanglement are quantitatively equivalent. Credit: Streltsov, et al.

(Phys.org)—It was an interesting week in physics as an international

team of researchers found that [quantum coherence and quantum entanglement are two sides of the same coin](#)—they found a way to show that the two are operationally equivalent. Also, another international team observed [a magnetic "devil's staircase"](#)—microscopic analysis of cobalt oxide revealed multiple instances of magnetic structures with degenerate or equal magnetic energies.

In space news, a pair of researchers at the University of Southern Mississippi wondered, [is the universe ringing like a crystal glass?](#) Their research suggests the entire universe might be oscillating as expansion slows due to gravity, all these years after the Big Bang. Also, astronomers noticed that [a monster black hole woke up after 26 years](#)—they began seeing emissions from V404 Cygni, a black hole-star binary system located in our own Milky Way galaxy.

It was a good week for technology advancements too as a company called Bounce Imaging announced that their [throwable tactical camera was getting a commercial release](#)—the ball-shaped cameras with sensors can be tossed into uninhabitable areas to provide clues on what is hidden inside danger zones. Also, researchers at the University of Central Florida announced that they had developed [the world's first full-color, flexible, skin-like display](#), marking progress toward eClothes or other novel products. Meanwhile photonics researchers at the University of California reported that they had [broken power and distance barriers for fiber optic communication](#)—they found a way to increase the maximum power that can be used to send a usable signal through a cable, increasing the distance it can travel before degrading. And a team at the University of North Carolina and NC State announced that they had developed a smart insulin patch that could replace painful injections for diabetes. A team of researchers at the University of California announced that they had created [a fuel-free nanomotor that is run by ultrasound and magnetic fields](#)—the first nanomotor that is a magneto-acoustic hybrid and fuel-free.

And finally, if you have had a sneaking suspicion that the internal dialogue that goes on in your head is not necessarily the part of you that is always in charge of your actions, a team of researchers at San Francisco State University has found evidence that suggests [consciousness has less control than believed](#)—which could help explain why it is we do things sometimes that we cannot believe we did.

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