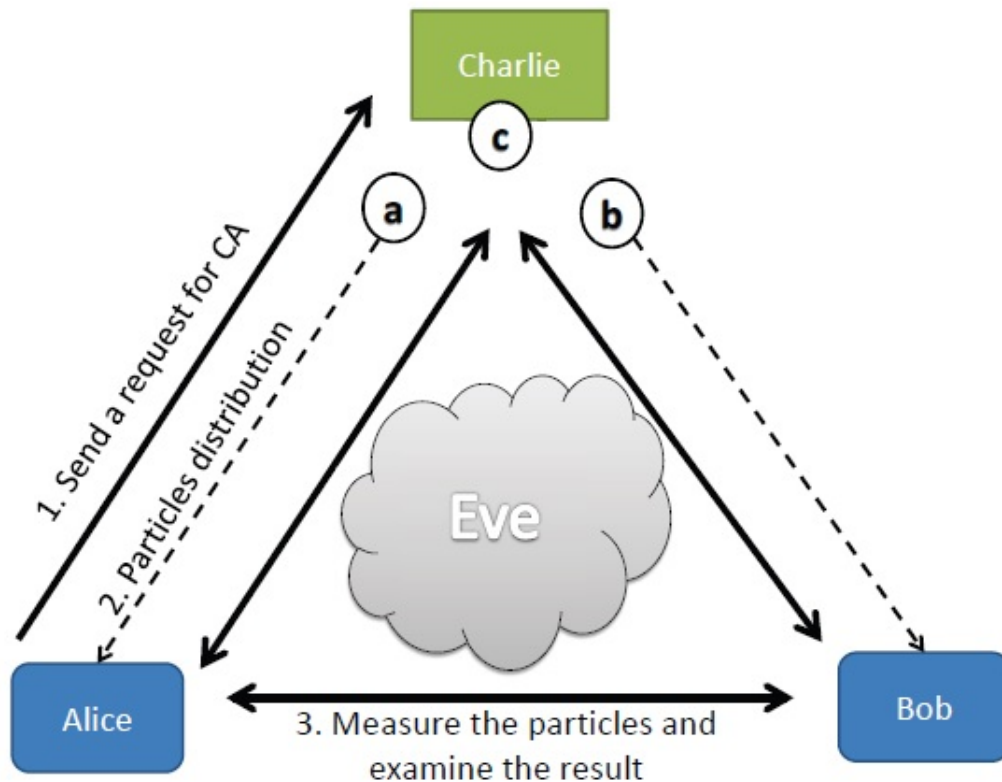


Best of Last Week—New violations of local realism, a computer that runs on water droplets and nuts warding off diseases

June 15 2015, by Bob Yirka



By extending Gisin’s theorem from pure states to mixed states that obey a certain property, the results of the new paper could have applications for quantum certificate authorization protocols, like the one shown here. Credit: Chen, et al. ©2015 Nature *Scientific Reports*

(Phys.org)—It was an interesting week for physics as a combined team of researchers from China and Singapore [demonstrated new violations of local realism](#)—they have shown that all mixed entangled states that conform to a particular steering property will violate local realism. Also a team with the Federal University of Minas Gerais in Brazil showed that [the Quantum Cheshire Cat effect may be explained by standard quantum mechanics](#), which questions the possibility of a particle being separated from its properties. And Joseph Fitzsimons and Carlos Pérez-Delgado published a paper describing [a blind quantum computing method that surpasses the efficiency 'limit'](#)—overcoming what has been considered to be a natural and universal limit on the efficiency of a particular quantum cryptography task.

Also, a team at MIT found that [at near absolute zero temperatures, molecules may start to exhibit exotic states of matter](#)—they chilled molecules in a gas of sodium potassium to a temperature of just 500 nanokelvins, which is over a million times colder than outer space, and found the molecules were more stable, lived longer and were more resistant to reactive collisions.

In other news, a team of engineers at Stanford developed [a computer that operates on water droplets](#)—it is a synchronous machine that operates using the unique physics involved with moving water droplets. And another team with the University of California demonstrated [a way of counting people with WiFi](#)—when those people are not even carrying WiFi enabled devices. Also, a team working at Case Western Reserve and UT Southwestern Medical Center announced [a new drug that triggers tissue regeneration](#)—called "SW033291," it promotes faster regrowth and healing of damaged tissues. And in an international effort, a team of researchers has shown that [injectable electronics hold promise for basic neuroscience and treatment of neuro-degenerative diseases](#)—they have developed a method for creating nano-sized scaffolds that can be injected using a simple syringe. And a team of researchers has

banded together to develop [a state-by-state plan for converting the US to 100 percent clean, renewable energy by 2050](#).

And finally, if you are one of those people that likes gobbling hard-walled, edible kernel fruit while watching football, good news: A team of researchers has found [that nuts and peanuts may protect against major causes of death](#). Conducted by the Netherlands Cohort Study, the research revealed a lowered risk of not only cardiovascular disease but also neurodegenerative and respiratory diseases, diabetes and cancer.

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