

Best of Last Week – Demonstration of a quantum Fredkin gate, ultra-fast winds near a black hole and reversing diabetes

March 28 2016, by Bob Yirka

Representation of measurements that demonstrate the contextuality-nonlocality tradeoff. Credit: Zhan, et al. ©2016 American Physical Society

(ScienceX)—It was another good week for physics as a team of researchers working in China found [that two defining features of](#)

[quantum mechanics never appear together](#)—they group was the first to confirm that nonlocality and contextuality never co-occur. A team of physicists with the University of Queensland and Griffith University [demonstrated a quantum Fredkin gate](#)—overcoming one of the key challenges to quantum computing. And a team with the University of Birmingham observed [nonlinear rotational Doppler effect in light for the first time](#), approximately 50 years after it was predicted by Nicolaas Bloembergen.

In space news, [space station cargo was launched by the light of a nearly full moon](#), offering fresh provisions for the International Space Station after a string of failures left astronauts with dwindling supplies. A team of astrophysicists at York University announced that they had [detected ultra-fast winds near a supermassive black hole](#), some moving at approximately 20 percent of the speed of light.

In other news, a team of researchers with the University of Michigan Medical School and Tufts University School of Medicine found that [there are more ancient viruses lurking in our DNA than we thought](#)—they found 19 new pieces, including one sequence in some people that contained the complete genetic recipe for a whole virus. A team of European researchers [found lead in ink used to write scrolls that were buried by the eruption of Mount Vesuvius](#), offering a possible avenue for reading ancient texts in a non-intrusive way. And a team of Australian and Chinese scientists reported on [research into the 'Holy Grail' of cancer treatment](#) using nanotech "smart packages" to target and destroy cancer cells. Also, [ancient super-eruptions in the Yellowstone caldera were 'significantly larger' than expected](#), according to [researchers](#) with the University of Leicester.

And finally, if you are one of the millions suffering from type 2 diabetes, there was good news as a team at Newcastle University conducted a study that showed [it is possible to reverse your](#)

diabetes—and stay diabetes-free long-term, simply by eating better and keeping your weight down.

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