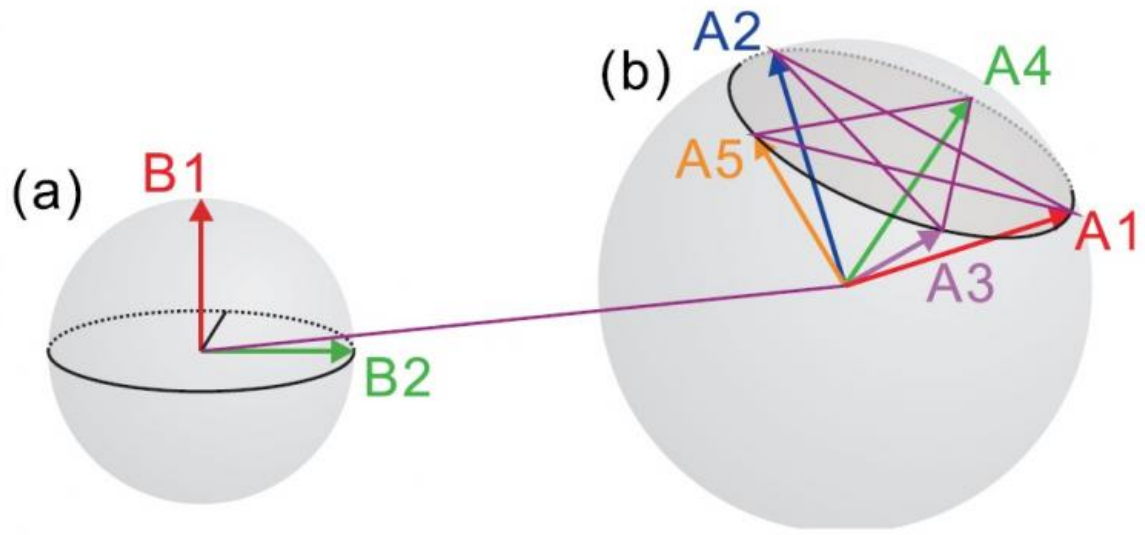
Best of Last Week – Demonstration of a quantum Fredkin gate, ultra-fast winds near a black hole and reversing diabetes

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.