

Year in Review—The most important research of 2015: November

December 28 2015, by Bob Yirka

Two pages from the book "Arithmetica Infinitorum," by John Wallis. In the table on the left page, the square that appears repeatedly denotes $4/\pi$, or the ratio of the area of a square to the area of the circumscribed circle. Wallis used the table to obtain the inequalities shown at the top of the page on the right that led to his formula. Credit: Digitized by Google

(ScienceX)—In this new monthly series, we are offering summary articles featuring links to some of the most interesting, intriguing or popular stories that appeared on ScienceX throughout 2015. This is the

November 2015 edition.

In physics news an international team of [researchers](#) announced that the ['material universe' yielded a surprising new particle](#)—the type-II Weyl fermion. The group found that when materials that had the material in it were moved into a magnetic field, they acted as insulators for current that was applied in one direction and as conductors for those applied in the other. Also a team of researchers working in the U.S. announced that they had achieved [quantum entanglement at room temperature](#)—they used infrared laser light to align the magnetic states of electrons and then electromagnetic pulses to entangle them. And in related news, a pair of researchers with the University of Rochester found that [a new derivation of pi links quantum physics and pure math](#)—the formula used to calculate quantum mechanical levels of hydrogen atoms was the same as the one developed by John Wallis back in 1655 to derive pi. Also a pair of researchers at North Carolina State University found [a new phase of carbon, and made diamond at room temperature](#)—it is called Q-carbon and they report the phase is distinct from diamond and graphite.

In other news, a team of researchers from Germany and the U.S. conducted a study that showed that [dispersants did not help oil degrade in the BP spill](#), begging the question of where the oil thought to have been dispersed by the dispersants, went instead. Also, another team made up of researchers from Germany and the U.S. [filmed army ants building moving bridges from their own bodies](#) demonstrating a level of collective intelligence that scientists did not know they had. And a team at the Happiness Research Institute conducted a study and found that [for a happier life, people should give up Facebook](#)—those that abstained were found to be 39 percent more likely to be happy. Also a team at Stanford University announced that they had developed [new technology that makes metal wires on solar cells nearly invisible to light](#), thus preventing energy loss due to sunlight being reflected off them.

In medical news, a team of researchers at the Salk Institute found that [an experimental drug used for targeting Alzheimer's disease showed anti-aging effects](#)—called called J147, it was found to improve memory and cognition and also led to healthier blood vessels in mice brains. Also a team of researchers working at King's College London and Sapienza University of Rome conducted a study involving MRI scans of human patients that showed [white brain matter damage caused by 'skunk-like' cannabis](#).

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