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Lab Claims Faster-Than-Light Particle

By THE ASSOCIATED PRESS

GENEVA (AP) — A pillar of physics — that nothing can go faster than the speed of light — appears to be smashed by an oddball subatomic particle that has apparently made a giant end run around Albert Einstein's theories.

Scientists at the world's largest physics lab said Thursday they have clocked neutrinos traveling faster than light. That's something that according to Einstein's 1905 special theory of relativity — the famous $E = mc^2$ equation — just doesn't happen.

"The feeling that most people have is this can't be right, this can't be real," said James Gillies, a spokesman for the European Organization for Nuclear Research. The organization, known as CERN, hosted part of the experiment, which is unrelated to the massive \$10 billion [Large Hadron Collider](#) also located at the site.

Gillies told The Associated Press that the readings have so astounded researchers that they are asking others to independently verify the measurements before claiming an actual discovery.

"They are inviting the broader physics community to look at what they've done and really scrutinize it in great detail, and ideally for someone elsewhere in the world to repeat the measurements," he said Thursday.

Scientists at the competing Fermilab in Chicago have promised to start such work immediately.

"It's a shock," said Fermilab head theoretician Stephen Parke, who was not part of the research in Geneva. "It's going to cause us problems, no doubt about that — if it's true."

The Chicago team had similar faster-than-light results in 2007, but those came with a giant margin of error that undercut its scientific significance.

Other outside scientists expressed skepticism at CERN's claim that the neutrinos — one of the strangest well-known particles in physics — were observed smashing past the cosmic speed barrier of 186,282 miles per second (299,792 kilometers per second).

University of Maryland physics department chairman Drew Baden called it "a flying carpet," something that was too fantastic to be believable.

CERN says a neutrino beam fired from a particle accelerator near Geneva to a lab 454 miles

(730 kilometers) away in Italy traveled 60 nanoseconds faster than the speed of light. Scientists calculated the margin of error at just 10 nanoseconds, making the difference statistically significant. But given the enormous implications of the find, they still spent months checking and rechecking their results to make sure there was no flaws in the experiment.

"We have not found any instrumental effect that could explain the result of the measurement," said Antonio Ereditato, a physicist at the University of Bern, Switzerland, who was involved in the experiment known as OPERA.

The researchers are now looking to the United States and Japan to confirm the results.

A similar neutrino experiment at Fermilab near Chicago would be capable of running the tests, said Stavros Katsanevas, the deputy director of France's National Institute for Nuclear and Particle Physics Research. The institute collaborated with Italy's Gran Sasso National Laboratory for the experiment at CERN.

Katsanevas said help could also come from the T2K experiment in Japan, though that is currently on hold after the country's devastating March 11 earthquake and tsunami.

Scientists agree if the results are confirmed, that it would force a fundamental rethink of the laws of nature.

Einstein's special relativity theory that says energy equals mass times the speed of light squared underlies "pretty much everything in modern physics," said John Ellis, a theoretical physicist at CERN who was not involved in the experiment. "It has worked perfectly up until now."

He cautioned that the neutrino researchers would have to explain why similar results weren't detected before.

"This would be such a sensational discovery if it were true that one has to treat it extremely carefully," said Ellis.



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