Michio Kaku on the 'God Particle'

A VIDEO from Europe's CERN physics lab, apparently posted mistakenly on the eve of an announcement on the elusive "God Particle," reveals that a new subatomic particle has been observed in the relevant range.

"We've observed a new particle," European Organisation for Nuclear Research (CERN) spokesman Joe Incandela says in the video that appeared on the Science News website before being picked up elsewhere. "We have quite strong evidence that there's something there... To ascertain its properties is still going to take us a bit of time."

Questioned by a feverish US media, CERN quickly insisted that the video was only one of several that was filmed in advance of Wednesday's hotly awaited announcement in Geneva, scheduled for 5pm AEST, hinting that some other scenario may unfold

The video, already leaked, has been relocated to a password-protected part of the CERN Web site.

But Mr Incandela appeared pretty sure of what he is saying in the video,pouring light on what has become something of a holy grail for scientists, physicists in particular.

"But we can see that it decays to two photons, for example, which tells us it's a boson, it's a particle with integer spin," he says.

"And we know its mass is roughly 100 times the mass of the proton... This is the most massive such particle that exists, if we confirm all of this, which I think we will."

Analysts pored over the subtle semantic differences in the video that might illustrate CERN's progress in finding the "God particle," an elusive sub-atomic particle that is believed to confer mass.

"Note that the language used refers to 'observation' NOT 'discovery,'" Peter Woit, a senior lecturer in mathematics at Columbia University in New York, wrote on his blog.

"'Observation' generally means a lower standard of evidence... However, it appears that (CERN is) sensibly playing this down, with nothing in the video mentioning the word 'discovery' or their decision not to use that word."

The video hints that CERN's word choice is indeed intentional.

Mr Incandela, the CERN spokesman, describes the findings as "one of the biggest discoveries..." before correcting himself to add "... or observations of any new phenomena in our field in the last 30 or 40 years."

US-based physicists from Fermi National Accelerator Laboratory (Fermilab) in the midwestern US state of Illinois reported Monday finding strong hints of the Higgs boson, but said CERN data was

needed to confirm any potential discovery.

The origin of mass (meaning the resistance of an object to being moved) has been fiercely debated for decades.

Finding the Higgs boson would vindicate the so-called Standard Model of physics, a theory that was developed in the early 1970s that says the universe is made from 12 particles that provide the building blocks for all matter.

The quest to prove, or disprove, the Higgs has been carried out at particle colliders: giant machines that smash protons together and sift through the sub-atomic debris that tumbles out.

The big daddy of these is the Large Hadron Collider (LHC), operated by CERN in a ring-shaped tunnel deep underground near Geneva.

Smashups generated at the LHC briefly generate temperatures 100,000 times hotter than the Sun, replicating the conditions that occurred just after the Universe's creation in the "Big Bang" nearly 14 billion years ago.

But these concentrations of energy, while violent, occur only at a tiny scale.

Evidence to support the existence of the Higgs is indirect, just as we cannot see the wind, but infer its existence and strength from leaves or flags or other objects that it moves.

Michio Kaku - The Australian News