



Large Hadron Collider failure will leave science back in the 'wilderness'

Science will be left back in a "nightmarish wilderness" if the Large Hadron Collider fails to find the elusive Higgs Boson, warns a rebel physicist.

Former Harvard professor Shahriar Afshar said that failure to find the particle would bring current scientific theory tumbling down like a house of cards with nothing to replace it.

The controversial physicist, whose Afshar experiment has already found a loophole in quantum theory, said that unless the scientific community starts contemplating a "plan B", failure could lead to "chaos and infighting".

He said failure will undermine more than a hundred years of scientific theory and undermine some of the mainstays of scientific thinking, the Standard Model, a general theory of how particles fit together to create matter.

It would also lead to bitter recriminations and infighting among the different scientists and a complete loss of confidence among the general public and taxpayer, he said.

"Everybody is in a festive mood," said Professor Afshar who is now a research professor at Rowman University in New Jersey.

"Champagne corks are ready to get popped but what is going to happen if nothing happens?"

"There will be an all-out war among physicists. It will be a nightmarish situation that will put physics back into the wilderness."

"We need to have a plan B. We need to get people together before it is too late to make contingency plans."

Professor Afshar said that it will be two or three years before the huge machine in Switzerland that cost £4 billion to build can be judged as a success or a failure.

But he believes that the hype surrounding the particle accelerator has meant that if it fails to establish anything - a strong possibility in his eyes - it will lead to disillusionment with science.

"It is not that I have an axe to grind against the LHC," he said.

"I am just tremendously worried about what will happen if we don't find the Higgs Boson. We have spent £10bn (£6.3bn) to ensure that we find the existence of this particle."

"If by the end of this process - say two or three years - we don't find it. There will be infighting, recriminations." (Source: Telegraph)

Star remnants retain 'memory' of explosions

Like the smoke left in the sky after a round of fireworks, debris remaining in the wake of a supernova could reveal exactly how that star exploded even though hundreds or thousands of years have passed.

That's what scientists have determined from images of such leftovers taken by NASA's Chandra X-ray Observatory.

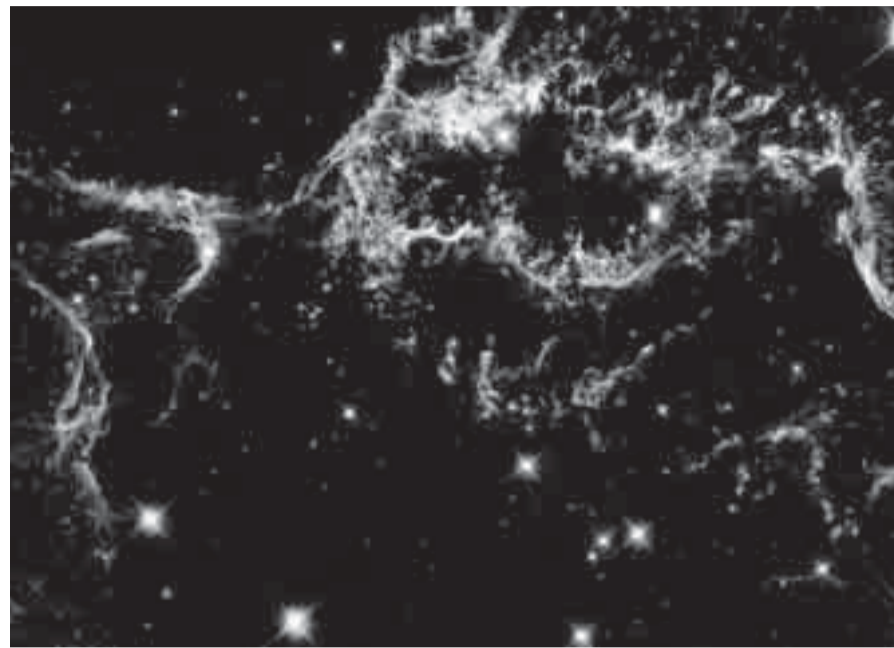
"It's almost like the supernova remnants have a 'memory' of the original explosion," said lead researcher Laura Lopez of the University of California at Santa Cruz. "This is the first time anyone has systematically compared the shape of these remnants in X-rays in this way."

Astronomers sort supernovas into categories based on properties in the optical spectrum within days of the star exploding. Such properties label a supernova in two main ways: Type Ia, meaning the progenitor was a binary star system in which one star accumulated matter from its neighbor until a runaway nuclear reaction ignited; or a Type II, which occurs when a very massive, young star collapses onto itself before exploding.

Since observed remnants of supernovas are leftovers from star explosions that occurred long ago, other methods are needed to accurately classify the original supernovas.

In the last 300 years we have not observed a supernova go off in the Milky Way," Lopez told SPACE.com. "And so all of the ones we've observed directly in the last 30 or 50 years are in other galaxies. The ones we know in our galaxy are only from remnants."

Lopez and her colleagues looked



at supernova remnants in the Milky Way and a neighboring galaxy, the Large Magellanic Cloud. Results showed that Type Ia supernovas left behind relatively symmetric, circular remnants, while debris

from Type II supernovas was distinctly more asymmetric.

When the stellar guts spew out into space, they also heat up the interstellar medium nearby, and so Lopez thinks the symmetry could tell astronomers something about that medium.

"It seems that Type Ia supernovas probably go off in a very low-density medium that's very homogenous whereas core-collapse supernovas probably go off in a very dense environment that is not uniform," Lopez said.

One of the remnants, known as

SNR 0548-70.4, was a bit of an oddball, the researchers found. Based on its chemical abundances, SNR 0548-70.4 was considered a Type Ia supernova, but Lopez found it was asymmetric, suggesting a core-collapse remnant.

"We do have one mysterious object, but we think that is probably a Type Ia with an unusual orientation to our line of sight," Lopez said. "But we'll definitely be looking at that one again."

Even though they studied supernova in our galaxy and a neighbor, the researchers think the technique could be extended to remnants farther away.

The research was published in the Nov. 20 issue of The Astrophysical Journal Letters.

(Source: Space.com)



High-tech vehicles pose trouble for some mechanics

LOS ANGELES (AP) — A sign inside the Humming Motors auto repair shop says, "We do the worrying so you don't have to."

These days, owner David Baur spends a lot of time worrying in his full-service garage near downtown Los Angeles.

As cars become vastly more complicated than models made just a few years ago, Baur is often turning down jobs and referring customers to auto dealer shops. Like many other independent mechanics, he does not have the thousands of dollars to purchase the online manuals and specialized tools needed to fix the computer-controlled machines.

Baur says the dilemma has left customers with fewer options for repair work and given automakers an unfair advantage.

"When I was younger, I kept going until I solved the problem," the weary mechanic said as he wiped grease from his hands while taking a break. "Lately I find myself backing out. I'm more reluctant to take complex jobs on."

Access to repair information is at the heart of a debate over a congressional bill called the Right to Repair Act. Supporters of the proposal say automakers are trying to monopolize the parts and repair industry by only sharing crucial tools and data with their dealership shops. The bill, which has been sent to the House Committee on Energy and Commerce, would require automakers to provide all information to diagnose and service vehicles.

Automakers say they spend millions in research and development and aren't willing to give away their intellectual property. They say the auto parts and repair industry wants the bill passed so it can get patented information to make its own parts and sell them for less.

"Coke doesn't give away the recipe for Coke," said Charlie Territo, a spokesman for the Alliance of Automobile Manufacturers. "What this bill seeks to get is the recipe for Coke."

Many new vehicles come equipped with multiple computers controlling everything from the brakes to steering wheel, and automakers hold the key to diagnosing a vehicle's problem. In many instances, replacing a part requires reprogramming the computers — a difficult task without the software codes or diagrams of the vehicle's electrical wires.

Meddling in mosquitoes' sex life could cut malaria

LONDON (Reuters) — Interfering in mosquitoes' sex lives could help halt the spread of malaria, British scientists said on Tuesday.

A study on the species of mosquito mainly responsible for malaria transmission in Africa, Anopheles gambiae, showed that because these mosquitoes mate only once in their lives, meddling with that process could dramatically cut their numbers.

Researchers from Imperial College London found that a "mating plug" used by male mosquitoes to ensure their sperm stays in the right place in the female is essential for her to be able to fertilize eggs during her lifetime.

Without the mating plug, sperm is not stored properly and fertilization is disrupted, they wrote in the study in the journal PLoS Biology.

"The plug plays an important role in allowing the female to successfully store sperm in the correct way inside her, and as such is vital for successful reproduction," Flaminia Catteruccia of Imperial's life sciences department wrote.

"Removing or interfering with the mating plug renders copulation ineffective. This discovery could be used to develop new ways of controlling populations of Anopheles gambiae mosquitoes, to limit the spread of malaria."

Around 40 percent of the world's population is at risk of malaria, a potentially deadly disease which is transmitted via mosquito bites.

It kills more than a million people worldwide each year and children account for about 90 percent of the deaths in the worst affected areas of sub-Saharan Africa and parts of Asia.

Catteruccia's team analyzed the composition of the male mosquito's mating plug and found it is formed when an enzyme called transglutaminase interacts with proteins in the male mosquito's seminal fluid. This interaction causes the fluid to clot into a gelatinous solid mass, known as the mating plug.

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