

Welcome to TimesPeople
Get Started

TimesPeople recommended: [The Sandra Bullock Trade](#)

10:46 AM

Recommend

HOME PAGE TODAY'S PAPER VIDEO MOST POPULAR TIMES TOPICS

Get Home Delivery in Chicago | Log In | Register Now

The New York Times

Science

Search All NYTimes.com



WORLD U.S. N.Y. / REGION BUSINESS TECHNOLOGY SCIENCE HEALTH SPORTS OPINION ARTS STYLE TRAVEL JOBS REAL ESTATE AUTOS
ENVIRONMENT SPACE & COSMOS

The new Vostro™ 3000 Series featuring Windows 7™ Professional. Get more business done. In Style. Be a Vostropreneur.

Starting at **\$599**
Get Yours Now

Windows 7 Professional

Large Hadron Collider Finally Smashing Properly



Fabrice Coffrini/Agence France-Presse — Getty Images

Physicists at the European Center for Nuclear Research celebrated on Tuesday.

By DENNIS OVERBYE

Published: March 30, 2010

PASADENA, Calif. — After 16 years and \$10 billion — and a long morning of electrical groaning and sweating — there was joy in the meadows and tunnels of the Swiss-French countryside Tuesday: the world's biggest physics machine, the [Large Hadron Collider](#), finally began to collide subatomic particles.

Following two false starts due to electrical failures, protons whipped to more than 99 percent of the speed of light and to energy levels of 3.5 trillion electron volts apiece around a 17-mile underground magnetic racetrack outside of Geneva a little after 1 p.m. local time. They crashed together inside apartment-building sized detectors designed to capture every evanescent flash and fragment from microscopic fireballs thought to hold

insights into the beginning of the world.

The soundless blooming of proton explosions was accompanied by the hoots and applause of scientists crowded into control rooms at [CERN](#), the European Organization for Nuclear Research, which built the collider. The relief spread to bleary gatherings of particle physicists all around the world, who have collectively staked the future of their profession on the idea that the new collider will eventually reveal new secrets of the universe, like the identity of the [dark matter](#) that shapes the visible cosmos and the strange particle known as the "Higgs," which is thought to imbue other particles with mass. Until now, these have been tantalizingly out of reach.

SIGN IN TO RECOMMEND

TWITTER

COMMENTS (75)

SIGN IN TO E-MAIL

PRINT

SINGLE PAGE

REPRINTS

SHARE



The new Vostro™ 3000 Series featuring Windows 7™ Professional. Get more business done. In Style. Be a Vostropreneur.

Starting at **\$599**
Get Yours Now

Windows 7 Professional

MOST POPULAR

E-MAILED BLOGGED SEARCHED VIEWED

1. [David Brooks: The Sandra Bullock Trade](#)
2. [Frank Rich: The Rage Is Not About Health Care](#)
3. [For Photographers, the Image of a Shrinking Path](#)
4. [Next Year in the White House: A Seder Tradition](#)
5. [State of the Art: iPhone App to Sidestep AT&T](#)
6. [Maureen Dowd: A Nope for Pope](#)
7. [Militia Charged With Plotting to Murder Officers](#)
8. [9 Teenagers Are Charged After Classmate's Suicide](#)
9. [Overqualified? Yes, but Happy to Have a Job](#)
10. [Opinionator: Power Tools](#)

[Go to Complete List »](#)



House of anger

ALSO IN OPINION »

[Google or China: Who has more to lose?](#)
From Mrs. Obama's garden

nytimes.com

OPINION

ADVERTISEMENTS

Vote for the collectible car of the year



“We’re expecting some answers,” said David Politzer, a Nobel laureate at the [California Institute of Technology](#), where refreshments in a conference room overflowing with Los Angeles-area physicists attending a midnight remote viewing included matzos, chips and pizza.

Rolf Heuer, director general of CERN, speaking from Japan, said the new collider “opens a new window of discovery and it brings, with patience, new knowledge of the universe and the microcosm. It shows what one can do in bringing forward knowledge.” He added: “It will also bring out an army of children and young people who will get into the private sector and academia.”

“We are all proud and so happy,” Fabiola Gianotti, a spokeswoman for CERN, said of one of the giant particle detectors at the collider, known as Atlas. Guido Tonelli, leader of a rival detector called C.M.S. said, “We are really starting physics.”

The success in colliding protons marks a remarkable comeback for CERN, but the lab is still only halfway back to where it wanted to be: Only a year and a half ago, the first attempt to start the collider ended with an explosion that left part of its tunnel enveloped in frigid helium gas and soot when an electrical connection between two of the powerful magnets that steer the protons vaporized. A subsequent investigation revealed that the collider is riddled with thousands of such joints, the result of what Lucio Rossi, head of magnets at CERN, said stemmed from a “lack of adequate risk analysis” in a recent report in the online journal *Superconductor Science and Technology*.

As a result, the collider, which was designed to accelerate protons to 7 trillion electron volts and then smash them together to reveal particles and forces that reigned during the first trillionth of a second of time as we know it, can only be safely run for now at half power. CERN physicists say that operating the collider for a year and a half at this energy level should allow them to gather enough data to start catching up with its American rival, the trillion-volt Tevatron at the Fermi National Accelerator Laboratory in Illinois, which is smaller but has been running for years and thus has a head start in data. After that, the CERN machine will shut down for a year so that the connections can be rebuilt.

Particle colliders get their oomph from Einstein’s equation of mass and energy. The more energy — denoted in the physicists’ currency of choice, electron volts — that these machines can pack into their little fireballs, the further back in time they can go, closer and closer to the Big Bang, and the smaller and smaller things they can see.

The first modern accelerator was the cyclotron, built by Ernest Lawrence at the [University of California, Berkeley](#), in 1932. It was a foot in diameter and boosted protons to energies of 1.25 million electron volts, the unit of choice for mass and energy in physics. By comparison, an electron, the lightest well-known particle, is about half a million electron volts, and a proton about a billion.

Over the last century, universities and then nations leapfrogged each other, building bigger machines to peer deeper into the origins of the universe. But the end was decreed in 1993, the U.S. Congress canceled the Superconducting Supercollider, a 54-mile 20-trillion-electron-volt machine being built underneath Waxahachie, Texas, after its projected cost ballooned to \$11 billion.

See the news in the making. Watch TimesCast, a daily news video.

Follow us on Twitter

See the news in the making. Watch TimesCast, a daily news video.

Ads by Google

what's this?

Coffee Fool Banned

Grocery stores won't stock us because we're the truth on fresh!
www.CoffeeFool.com

UCLA Burkle Center

Burkle Center UCLA Founded in 1979
www.international.ucla.edu/burkle

Distance Learning MBA

From #1 Ranked Business School Designed for Working Professionals
www.thunderbird.edu

“The play that changed my life.”
From Durang to Gurney. ▶
nytimes.com
Where the conversation begins.



RELATED ADS

What are Related Ads?

- » Foreign Policy Trade
- » Diplomacy
- » Foreign Affairs
- » Diplomacy Board Game
- » Foreign Relations

1 | **2** | [NEXT PAGE »](#)

COMMENTS

SIGN IN TO E-MAIL

PRINT

SINGLE PAGE

REPRINTS



The finest journalism in Chicago? The New York Times, as low as \$3.70 a week.

INSIDE NYTIMES.COM



Ads by Google

what's this?

Hyatt's New Business Plan

Complimentary Breakfast, Laundry, Internet & More. Book Now.
www.Hyatt.com

Google Finance

Use Google for financial news and investment management tools
www.google.com/finance

Online Executive MBA

Earn an Executive MBA Online at RIT. No GMAT or GRE, Free Brochure.
EmbaOnline.RIT.Edu

Related Searches

Particle Accelerators

[Get E-Mail Alerts](#)

CERN

[Get E-Mail Alerts](#)

Physics

[Get E-Mail Alerts](#)

Magnets and Magnetism

[Get E-Mail Alerts](#)

HEALTH »



Overhaul Will Lower the Costs of Being a Woman

N.Y. / REGION »



Lobbyists Disregard Rules of Access to Assembly

WORLD »



A Guiding Voice Amid the Ruins of a Capital City

OPINION »

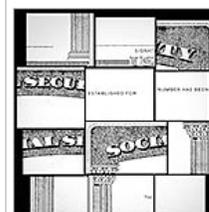
Bloggingheads: Neurowar
John Horgan and George Johnson debate applying neuroscience to warfare.

ARTS »



'Come Fly Away': The Nature of the Event

OPINION »



Letters: Is Social Security Ripe for Reform, Too?

[Home](#) | [World](#) | [U.S.](#) | [N.Y. / Region](#) | [Business](#) | [Technology](#) | [Science](#) | [Health](#) | [Sports](#) | [Opinion](#) | [Arts](#) | [Style](#) | [Travel](#) | [Jobs](#) | [Real Estate](#) | [Autos](#) | [Back to Top](#)
Copyright 2010 The New York Times Company | [Privacy](#) | [Terms of Service](#) | [Search](#) | [Corrections](#) | [RSS](#) | [First Look](#) | [Help](#) | [Contact Us](#) | [Work for Us](#) | [Advertise](#) | [Site Map](#)