

Re: Large Electron Positron Collider

Source: <http://sci.tech-archive.net/Archive/sci.physics.relativity/2005-01/3797.html>

From: EJP (*nospam_at_hackers.are.bad*)

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DavidBowman wrote:

>>>*From the gusiness world record site.*

>

> *Does anyone know why in the world they dismantled this device? That's*

> *the dumbest idea since shutting down hubble.*

>

Actually it represented a very wise decision.

Remember that particle physics is a statistical science. To first order, precision increases as \sqrt{N} , where N is the number of events observed. The rough rule of thumb is that a meaningful extension to an experiment is one that *doubles* the statistics. LEP spent most of its life at the Z^0 resonance. After they ran out of ideas to increase the luminosity, it would have taken many years to double the statistics they already had, so they decided to increase the energy. They got to a little over 200 GeV center of mass energy by literally filling every available space in tunnel with RF. This energy allowed them to probe the W^+W^- production threshold, which had very specific physics interest, and to extend the reach for Higgs and some Supersymmetric studies. Again, once they had done these things, they would have had to run for years more to make very marginal improvements in the sensitivity.

It was seen as a much better bet to shut down LEP, so they could use the tunnel to move ahead with the LHC.

-E

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> *The world's largest scientific instrument (and arguably the world's*

> *largest machine) is the Large Electron Positron Collider. It is a*

> *circular tube 3.8 m (12 ft 6 in) in diameter and 27 km (17 miles) in*

> *circumference. It is situated in a giant donut-shaped tunnel 100 m (330*

> *ft) below the area around the Swiss-French border in Geneva. The*

> *machine began operating in 1989 and was officially closed down at 8 am*

sci.physics.relativity: Re: Large Electron Positron Collider

> *on November 2, 2000.*

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