

Around the Laboratories



Fermilab

*Discovering
the Nature
of Nature*

Fermi National Accelerator Laboratory A Department of Energy National Laboratory

Fermilab is a high-energy physics laboratory, home of the world's most powerful particle accelerator, the Tevatron. Scientists from across the U.S. and around the world use Fermilab's resources in experiments to explore the most fundamental particles and forces of nature.

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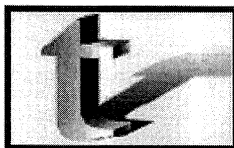
Web offset

The World-Wide Web was conceived at CERN to allow particle physicists easy access to information wherever they happened to be. It has taken the world by storm, and been hailed a telecommunications revolution. From Stockholm to Kathmandu, daily newspapers publish Web editions, and by the end of 1995, the number of Web servers had grown to nearly 75 000. But has the original objective been achieved? Has the Web changed the way that physicists conduct their work?

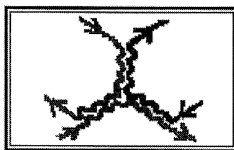
The answer is a resounding "Yes". At particle physics laboratories the world over, information about accelerator schedules and performance is posted on the Web. Experiments use the Web to distribute draft papers, carry meeting announcements and minutes, and to publicize their work. The much-admired Fermilab home page has even made it into the Netscape "What's Cool" list, along with the CIA and MTV.

At CERN, event pictures from the recent Large Electron Positron collider (LEP) 130 GeV run were on the Web just minutes after they were recorded. All four of the LEP experiments, ALEPH, DELPHI, L3, and OPAL are finding innovative uses for the Web, often using password-protected areas away from the public domain.

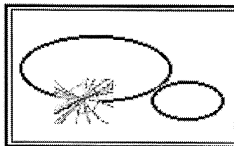
ALEPH has "hyperized" all of its reconstruction software and documentation in a system christened Light (Life cycle Global HyperText). So, for example, a click on a subroutine call in the source code takes you to that routine's documentation. Analysis software



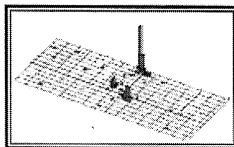
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[Fermilab at Work: An Insider's Guide to Lab Activities, Info & Schedules](#)

webmaster@fnal.gov
Nov 30, 1995

Fermilab's home page (URL: <http://fnnews.fnal.gov/>) is a widely admired example of effective presentation on the World-Wide Web.

and simulations will soon be added to this package, which will eventually include job submission templates so that a full ALEPH analysis can be conducted through a Web interface.

L3's paper review process is now entirely Web-based. Draft papers are put on the Web and announced in a news item. The Web page also includes information about authors, review schedules, and deadlines for comments. Any L3 physicist anywhere in the world can consult draft papers on the Web, and express his views. After final approval, papers are moved to the L3 public Web page, and submitted to a journal for publication in a more traditional form.

OPAL has developed a Web-based link with Thorn EMI Electron Tubes. The idea is to speed up the development phase of a new sub-detector currently being installed. An exacting quality control procedure for Thorn EMI photomultipliers has been implemented at CERN, and the results are posted on a password-protected area. There, they are consulted by Thorn EMI, and fed back into the company's own quality control procedures. Both OPAL and Thorn EMI have benefited.

As a result of the test database being simultaneously available to OPAL and Thorn EMI, the company has been more directly involved with its client. The benefit to OPAL comes from faster development of the new sub-detector.

The two general-purpose experiments preparing for CERN's next big accelerator, the LHC, are the

first to grow up in the Web era. Both ATLAS and CMS are building up complete information reservoirs on the Web. At CMS, text files are submitted to the reservoir by electronic mail. A number of keywords included in the subject line is interpreted by the system which then stores the file where it belongs and puts in all the necessary hyperlinks automatically. For more complex documents, such as pictures, the e-mail contains a pointer to the document. ATLAS has all information since 1993 on the Web, with automatic features for storing, archiving and accessing internal documentation.

Physicists working on the SLD experiment at the SLC linear collider, SLAC, Stanford sign up for their shifts on the Web, and some shifts are even run through the Web. SLD has developed a data browser which allows collaborators around the world to check the quality of data as they are taken. Offline shift crews use this browser to check the data remotely.

Accelerator groups also make full use of the Web's capabilities. At CERN, machine schedules are kept up to date, and during running, the status pages of the SPS and LEP are revised every machine cycle. This information, only available before via television screens around the Laboratory, can now be seen from anywhere in the world.

Lecture notes on accelerator physics for CERN Summer Students are publicly available complete with figures and diagrams. Contributions to LEP performance workshops and the biennial European Particle Accelerator Conference can be composed and submitted using Web templates. Papers received in this way are compiled into proceedings for publication in paper and electronic forms.

And what of the future? One day, perhaps not too far off, night shifts could become a thing of the past. CERN experiments could be controlled through a Web interface by physicists from the United States or Japan whilst Geneva sleeps. But physicists at CERN will still be the ones to answer the 4am call-outs; there will always be some problems that even the Web can't solve.

All of CERN's public WWW sites are accessible through the CERN Welcome page at <http://www.cern.ch/BigWelcome.html>

The gantry of the new proton cancer therapy facility at the Swiss PSI Laboratory, which will soon be taking its first patients.

VILLIGEN New proton therapy facility

On 30 January, the Swiss Paul Scherrer Institute in Villigen, together with the future collaboration of users from the national and international specialist medical community, formally inaugurated an impressive new proton beam cancer therapy facility, said to be the first of its kind in the world.

Radiotherapy - irradiation by special beams - is one of the most effective weapons to combat malignant cancers, and the increased precision given by proton beams provides special benefits. Using proton beams from PSI's 600 MeV cyclotron, degraded to some 200 MeV and

