

Brief and Biased History of Preprint and Database Activities at the SLAC Library, 1962-1994

by L. Addis (with a few updates in Jan 1997, Jun 1999, Apr 2000, Jan 2002)

1962

SLAC Library begins with the charge from SLAC's first Director, W.K.H. Panofsky, to actively and promptly acquire preprints in high energy physics, catalog preprints fully (and promptly), and include every author no matter how many there are. Library starts with several boxes of CERN reports donated by kindly physicists. (Actually SLAC was then only known as Project 'M', 'monster?')

Mme. Luisella Goldschmidt-Clermont, CERN's innovative preprint librarian (probably the first ever preprint librarian) is invited to spend a month helping us get started. Her astute advice and kind mentoring during the earliest years of the SLAC Library prove invaluable as we work to establish very strong manual systems for obtaining, cataloging, announcing, and discarding (when published) preprints.

1969-70

Computers become more powerful and development begins at Stanford University of what eventually becomes the SPIRES DBMS with the SLAC Library as a primary test site.

1969

The APS Division of Particles and Fields and the AEC sponsor community-wide distribution of SLAC's weekly list of new preprints, Preprints in Particles and Fields. (PPF) Hundreds of physicists pay an annual subscription fee to get PPF weekly by airmail. Those in faraway places often complain that they can't actually get copies of the preprints on the list or that they come very late (PPF continues hardcopy publication until Fall 1993.)

Dubious and hostile journal editors are mollified by a PPF section called Anti-preprints, which lists journal references for recently published preprints.

SLAC Library systematically looks for publication information for preprints, discards published preprints, annotates its card catalog with journal references.

1970's

We are told that full-text databases are just around the corner and that soon we will not need books.

1974

The SPIRES-HEP (High-Energy-Physics) database begins. Best estimates predict a

steady state not larger than 5000 bibliographic records.

SLAC now annotates the bibliographic records in the HEP database with publication information (as well as its card catalog) and continues to trash dead preprints.

The SLAC and DESY Libraries team up to jointly create the HEP database (a collaboration (which continues to this day). DESY contributes physicist- assigned TOPIC indexing and bibliographic records for articles which were never preprinted

1975

An average of 70 preprints/week arrive in the SLAC Library.

1979

Donald Knuth at Stanford publishes a description of his new text formatting system called TeX. It provides a way to get high quality mathematical text (including physics notation) using simple ASCII characters as input.

Early 80's

More and more physicists ask to continue their computer accounts when they leave SLAC so that they can consult SPIRES from their new home institutions.

1980

An average of 97 preprints/week arrive in the SLAC Library

1982

SLAC Library becomes first library at Stanford to throw out its card catalog.

1983

Louise Addis of the SLAC Library and Prof. Edwin Parker of Stanford University share the Division Award of the Physics-Astronomy-Mathematics Div. of Special Libraries Association for development of the SPIRES-HEP database. This is the first time that an online database has been chosen as the basis for this award rather than a printed book.

Mid 80's

SLAC computing moves to an IBM VM/CMS system which is hospitable to creation of 'servers.' George Crane of SLAC's Computing Group (working from an idea proposed by physicist, Paul Kunz) develops "Remote SPIRES," and the QSPIRES server starts up on Bitnet.

Now it is possible to query the SPIRES-HEP database without actually having an account on the SLAC computer, by sending messages or e-mail to the QSPIRES server. At its peak, QSPIRES is responding to inquiries from 662 nodes in 44 countries and has almost 5000 registered non-SLAC users.'

1985

An average of 116 preprints/week arrive in the SLAC Library.

In 1985, a total of 11,757 records are added to SPIRES-HEP (includes preprints, reports, unpreprinted journal articles, theses, etc.). The database now has grown to over 141,000 records.

1980's

Everyone is talking about the 'paperless' office as they acquire new higher speed printers..

Most particle physics graduate students write their theses using TeX and though everyone complains about having to learn the notation, TeX is widely used in the particle physics community.

1990

An average of 143 preprints/week arrive in the SLAC Library.

17,938 records are added to SPIRES-HEP. The database passes the 200,000 record mark.

August 1991

The revolution begins - Part 1:

Paul Ginsparg, a theoretical physicist, starts the first e-print archive at hep-th@xxx.lanl.gov and invites fellow string theorists to deposit the TeX source for their new preprints by e-mail. New preprints are announced and distributed by listserv. Hep-th is successful beyond the wildest of dreams owing in large measure to the talents of Ginsparg who combines his many good ideas with actual computer smarts. It is now possible for any physicist on the Internet to keep up with the preprint literature.

An excellent article about the e-print archive development and futures is:, First Steps Towards Electronic Research Communication by P. Ginsparg, Computers in Physics: 3, 390 (Jul/Aug 1994)

August 1991

SLAC Library hastens to add a field for 'bulletin board' number to the SPIRES-HEP database (for a long time the e-print archives are called 'bulletin boards'). The first number is HEP-TH 9108001 based on the year and month and unique series

number. A TeX expert is hired parttime to obtain papers from bulletin boards, TeX them and pass the hard copy along to the library catalogers for entry in SPIRES-HEP.

Late 1991

The revolution continues, Part 2:

Paul Kunz, a SLAC physicist, brings word of the World-Wide-Web development by Tim Berners-Lee and a group at CERN, our sister laboratory in Geneva, Switzerland. Kunz immediately sees its potential as a way to streamline access to the SPIRES-HEP database and outlines his ideas to Librarian, Louise Addis. With her enthusiastic support, Kunz and an associate, T. Hung, start work on bringing up a WWW server at SLAC.

Dec 12, 1991

The first U.S. WWW server is established at SLAC to provide access the the SPIRES HEP database. G.Crane provides the interface between the Web server and SPIRES. Addis makes SPIRES write HTML 'on the fly'.

Feb 1992

An Ad Hoc web support group, the WWW Wizards is convened by L. Addis. The 'volunteers' are Louise Addis, Mark Barnett, George Crane, Tony Johnson, Joan Winters, and Bebo White. The group is advised by Paul Kunz and starts work immediately to enhance WWW at SLAC.

Summer 1992

As we learn how to use the features of WWW, we start linking bulletin board preprints to their TeX source on the servers at Los Alamos. This isn't really full-text but it's a lot better than nothing. SPIRES creates the html dynamically and presents it to the W3 server.

More bulletin boards appear. astro-ph, hep-ph, hep-lat, gr-qc, nucl-th, and the TeX burden increases.

QSPIRES users are encouraged to FTP the free browser from CERN and change to WWW and some do.

Fall 1992

WWW Wizard, Tony Johnson, a physicist with the SLAC-SLD experiment, releases the MidasWWW browser. Based on Motif/X, MidasWWW allows viewing of postscript files on the Web from Unix and VMS, and even handles compressed postscript.

Spring 1993

The SLAC Library acquires a NeXT and a 1.3 gigabyte disk and starts to take the 'next' step by converting the TeX DVI files to postscript using the DVIPS program on Unix. The files are then compressed and stored on a WWW server disk. Figures are requested by e-mail from authors, faxed to our NextFAX, converted to EPS format and posted with the basic text on the SLAC postscript server (preprint.slac.stanford.edu).

SPIRES-HEP can now be searched using the MidasWWW browser on an X-terminal and the genuine full-text complete with equations and often figures can be displayed or printed.

June 1993

The full text service is made public.

1993

A new X browser called Mosaic is released by NCSA. It has many of the features of MidasWWW and the full support of a large organization. With the availability of Mosaic, Web use starts to gain momentum.

August 1993

SPIRES-HEP now receives about 38,000 queries/month. Of these, 15,000 are thru WWW.

December 1993

SPIRES-HEP averages 178 new preprints each week and more than 20,000 new records are added in 1993 (remember that HEP isn't just preprints!).

January 1994

Paul Mende of Brown University gives us a present of his automatic texing program and installs it for us on our own system. With some tuning and additional scripts, the whole process of ftping tex source from various e-print archives and trying to tex them and update the tracking and abstracts database is automated. Eventually it handles about 55% of all the e-print papers completely. We still, however, must carefully check each one for viewability and printability and manually deal with the remaining 45%..."

DESY and CERN give us a hand with TeX to postscript, but with the advent of automatic processing distributed texing becomes less effective.

1994

Additional features are added to the SPIRES-HEP service thru WWW. It is now possible to see who has cited any of an author's papers and go directly to the full-text if the citing paper appeared on a bulletin board (now called the politically correct 'e-print archives').

1994

Ginsparg at LANL starts to link to the SLAC postscript server in order to supply .ps.Z files as well as the TeX source. Others start setting up shadow servers to have the postscript versions closer at hand. (Networks are the limiting factor. Not everyone has fast enough connections yet to make postscript viewing feasible).

1994

Use of WWW explodes to the world beyond physics.

April 1994

An e-print archive for experimental particle physics (hep-ex) is started.

September 1994

SPIRES-HEP averages 187 new preprints/week, more than 65% as e-prints.

The total size of the database now reaches 292,000 records. (Remember that HEP isn't just preprints.)

September 1994

SPIRES-HEP is now getting 83,000 queries/month, 65,000 of them thru WWW.

September 1994

Hrvoje Galic of the SLAC Library adds 3000+ links to non-eprint papers stored on servers at the various labs. He also starts adding links to the Nuclear Physics (journal) server provided by Elsevier and accessible only to organizations whose libraries are subscribers. We hope fervently for more such journal links in the future as other publishers join in. We also hope for something better than TeX source from publishers in the future.

Early 1995

The total size of the database passes 300,000 records! Bob Gex has probably proofed almost every one of those records during his years as cataloger extraordinaire.

March 1995

SPIRES-HEP is now getting more than 100,000 queries/month, mostly thru WWW. SLAC and DESY libraries together are processing between 600 and 700 TeX e-prints/month.

Ginsparg and his group start work on a more comprehensive auto-TeXing program and establishing better submission standards for authors.

1996

At SLAC, Harv Galic establishes links with Phys.Rev.D and starts receiving all Phys.Rev.D papers before publication so that they will be 100% represented in SPIRES-HEP.

December 1996

Total size of SPIRES-HEP database exceeds 338,000 records. Of the almost 20,000 records added in 1996, 10,880 are available on the internet as full text documents via WWW.

All TeX processing is now done at the e-print archive machine. E-prints are now available in both postscript and PDF formats.

SPIRES-HEP now gets more than 200,000 queries/month via WWW.

June 1999

Total size of SPIRES-HEP database is now almost 400,000 records, of which over 150,000 are available on the internet as full text documents thru the LANL eprint server, various journal servers, and institutional preprint servers, etc.

SPIRES-HEP now gets between 300,000 and 400,000 queries/month via WWW.

Apr 2000

SPIRES-HEP passed into the new century without incident. The database is now 423,000 records with almost 500,000 queries/month via WWW.

A new and popular feature, a citation summary report, is now available. Not only can users find out who has cited their papers (as well as other conventional uses for citation indexing), but now they can run a summary of all their eprints and published papers showing total citations, with a breakdown by 'famous papers' (over 500 citations) on down thru several categories.

Jan 2002

SPIRES-HEP includes 480,000 records with well over 600,000 web searches per month thru the SLAC server. In addition, there are now four (4) mirror sites in

Germany, Japan, Russia and the U.K.

Preprint History at SLAC
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