

Commentary

Another Opinion

Mathematics Journals Should Be Electronic and Free(ly Accessible)

Except for one word, that was the title of Steven Krantz's editorial column in the September 1997 *Notices*. Krantz's column began: "Of course I don't believe what the title says. But I got your attention." He then lists problems he sees with free electronic journals. Three of these objections deserve a response by those of us who *do* agree with the title. The three objections are: (1) electronic media are perishable, (2) electronic formats change frequently, and (3) electronic journals still have major costs.

Below is a description of an important new initiative—the LANL Mathematics E-print Archive—for the storage and distribution of electronic research articles. We expect that over the next several years it will become the home of a substantial fraction of the entire primary mathematical literature.

Numerous benefits will accrue from having a carefully managed, uniform database of nearly the entire mathematical literature. Here we comment only on how it can help provide solutions to the above three problems.

1) The LANL e-print archive is mirrored in sixteen countries. No credible catastrophe could simultaneously destroy all these independent repositories.

2) Only rarely used or poorly maintained databases are at risk when electronic formats change. Large, widely used databases, such as the LANL archive, can be and have been translated to new formats with minimal cost and effort.

3) Using a model referred to as an "overlay" journal, the LANL e-print archive will enable publishers to produce electronic journals at minimum cost and with minimum fees. An overlay journal evaluates papers in the time-honored manner, but authors submit papers by first contributing them to the LANL math archive and then providing the paper's ID number to the journal. Accepted papers constitute the journal; they are available from the journal's Web site, but they continue to be directly accessible from the LANL archive.

Other electronic journals will choose to go beyond this bare-bones approach, adding value in various ways (for example, by copyediting authors' manuscripts). This will incur added expense, but by avoiding the costs of printing, binding, and mailing, these electronic journals too will be considerably less expensive to produce than traditional paper journals.

The cost savings of "going electronic" can contribute substantially to the most essential goal of publication: keeping the entire mathematical primary literature freely avail-

able to scholars everywhere. And insofar as we mathematicians leave our papers on the LANL e-print archive, no one will be prevented from accessing them.

—Greg Kuperberg, David Morrison, and Richard Palais
(for the LANL Mathematics E-print Archive
Steering Committee)

The LANL Mathematics E-print Archive

A new service has been established that could have significant consequences for research in mathematics and for the mathematical community—the LANL Mathematics E-print Archive. The Steering Committee* invites you to explore this archive on the Web, at either the UC Davis front end (<http://front.math.ucdavis.edu/>) or directly at Los Alamos (<http://xxx.lanl.gov/>).

The LANL physics archive has more than 70,000 e-prints, accruing at a rate of over 20,000 per year. Maintained by a full-time staff and funded by the DOE and the NSF, it offers many technical conveniences, including an automatic \TeX compilation system with next-day distribution, e-mail notification, search facilities, and a network of mirror sites in sixteen countries. The mathematics archive was formed at the beginning of 1998 from various subject-based e-print archives on the Internet; although new, it already has over 5,000 e-prints and is increasing by over 150 each month. The Steering Committee is a group of mathematicians formed to direct this expansion in coordination with the LANL archive staff at Los Alamos.

Fundamental changes in scholarly communication in mathematics are on the horizon, and we believe that mathematicians need to intervene now to ensure that the system that emerges meets our needs. Historically, the mathematical literature has been maintained by an array of publishers, and universal indexing (provided by *Math Reviews* and *Zentralblatt*) has only come afterwards. With the Internet it is possible, and in our view important and desirable, for the mathematical community to establish a free, universal, primary database of e-prints that will allow rapid access to the literature from anywhere in the world.

We invite each of you to submit at least one research article in mathematics to LANL to learn the system. (Instructions are available at <http://front.math.ucdavis.edu/submissions.html> or at <http://xxx.lanl.gov/help/submit/>.) Anything you contribute will give your work immediate and significant visibility, since thousands of mathematicians regularly browse the archive. More importantly, your presence will encourage your closest colleagues to contribute also; it will help establish the use of LANL e-prints in your research areas.

*The Steering Committee for the LANL Mathematics E-print Archive is composed of Gilbert Baumslag, Robert Bryant, Bill Casselman, Joe Christy, Paul Ginsparg (ex officio), Greg Kuperberg, Robert Lazarsfeld, Elliott Lieb, Dave Morrison (committee chair), Andy Odlyzko, Dick Palais, Jim Stasheff, Mark Steinberger, and Bill Thurston.