

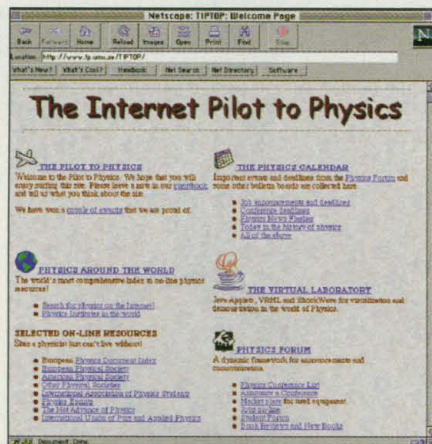
# NETWATCH

edited by JOCELYN KAISER

## Navigating Physics

Physicists, says McGill University postdoc Mikko Karttunen, may have been a bit slow to embrace the Web as a useful communication forum, not just for “reading the newspaper” or online preprints. But they have made up lost ground with The Internet Pilot to Physics (TIPTOP), a site for posting everything from job ads to tutorials that’s become one of the Web’s biggest draws for physics since it went up in 1994.

The operating principle behind TIPTOP is that almost everything on it—from announcements to outside links—is added by users through an automated database system, says Karttunen, who runs the site with a grad student in Austria and a postdoc at Sweden’s Umeå University, which hosts the site. In part, TIPTOP is a bulletin board replete with job openings, conference announcements, and even ads to sell equipment. It also has a grab bag of Web tools such as Java applets that, for example, let one imagine running a nuclear



[www.tp.umu.se/TIPTOP/](http://www.tp.umu.se/TIPTOP/)

power plant, as well as other features—including advice on how to organize a thesis. Also on the site is Physics Around the World, a directory with URLs for everything from science Olympiads to journals and about 2500 physics departments.

Although TIPTOP's hits are at 15,000 a day and climbing, its caretakers have reached a turning point: “We’re starting to find jobs,” Karttunen says. So TIPTOP is being transferred to the Institute of Physics in the United Kingdom, which intends to keep access free.

## New Search Strategy Untangles the Web

At a time when Internet traffic is doubling every 100 days and searches can haul in tens of thousands of Web pages, researchers are scrambling to find new ways to pare down the info. One promising new approach is to analyze the hyperlinks connecting Web pages—not their text—to pick out the most useful sites for a topic.

Among those pursuing the idea is Cornell computer scientist Jon Kleinberg and colleagues at the University of California, Berkeley, and IBM. When you put, say, “jaguar” into the search engine Alta Vista, Kleinberg notes, you’ll get 440,000 pages on everything from jaguars in zoos to car dealers and the Atari Jaguar computer. His group’s program narrows this list by assigning a weight to each page according to its links to and from other sites; lots of links toward a site make it an “authority,” Kleinberg says, while pages with links to authorities are “hubs.” After several iterations, the hubs cluster around the authorities, he adds. The result is four or five sets of perhaps a dozen sites, each set about just one topic—for example, the Jaguar computer.

**Talking heads.** Bill Gates, Richard Dawkins, and others debate topics like consciousness, human history, and the meaning of numbers at an online salon that creator and author John Brockman describes as where “today’s leading thinkers take their ideas into the bull ring.” [www.edge.org](http://www.edge.org)

**HOT PICKS**

**Catchall for chemists.** Check out news updates, an online magazine, job and conference notices, product info, and more at a new site run by the Royal Society of Chemistry for a network of 30 national chemistry societies. [www.chemsoc.org](http://www.chemsoc.org)

**Biologo.** You’ll find definitions of more than 46,000 terms from biochemistry, medicine, plant biology, and other areas in the The Online Medical Dictionary, compiled by Graham Dark of the U.K.’s Gray Laboratory Cancer Research Trust. [www.graylab.ac.uk/omd/](http://www.graylab.ac.uk/omd/)

“In a lot of cases, [each set] is comparable in quality” to the best Web resource lists compiled by people, such as Yahoo!’s lists, says Kleinberg. IBM has applied for a patent on the algorithm. Look for links-based searching strategies from a half-dozen other universities pursuing the idea, Kleinberg says, as well as from search engine companies.

**Technicolor chemistry.** Not so long ago, one learned chemistry from those stodgy stick-and-ball models on the teacher’s desk. But with today’s computer graphics, chemists can turn out a visual feast of multicolored molecules and animations of atoms in motion. One place to partake is a page of links called The Chemist’s Art Gallery, run by Leif Laaksonen of Finland’s Center for Scientific Computing in Espoo ([www.csc.fi/lul/chem/graphics.html](http://www.csc.fi/lul/chem/graphics.html)). Some links showcase the center’s own work, such as these stills from a movie of a drop of stringy molecules spreading on a surface. Other links lead to images on more than 40 other sites, from portraits of viruses to flicks of dancing water molecules and proteins docking to enzymes in slow motion. Laaksonen says the page has “attracted a broad range of people from school kids to scientists” since he started it 4 years ago.

## NET PICS



## SCIENCE ONLINE

Fed up with the quality of higher education? Don’t moan, get organized! Today *Science’s* Next Wave publishes a feature called Student Power. Using examples of student activism, such as campaigns for free education in the United Kingdom and for bigger research budgets in Canada, several articles show what can be achieved when students band together and fight for change. There are also tips on setting up a postgrad association and hyperlinks to campaigns that you can get involved in. [www.nextwave.org](http://www.nextwave.org)

Send Internet news and great Web site suggestions to [netwatch@aaaas.org](mailto:netwatch@aaaas.org)