Maglev Train Up and Running

Science fiction becomes reality this month as the first daily service of a passenger-carrying magnetic levitation transportation system becomes operational at Old Dominion University in Norfolk, Virginia. In Maglev trains, opposing magnetic fields generated by the train and track repel each other, keeping the train floating a few centimeters in the air and enabling it to reach speeds up to 476 km per hour, significantly faster than conventional trains. The technology has been around for awhile, but apart from several prototypes in Europe and Japan, Maglev trains have never left the drawing board due to their high construction costs compared to other forms of transportation.

The $14 million Old Dominion system won't reach peak Maglev speeds. The 12-ton train will float along at 64 kph down a 1-km long elevated metal track, and will stop every few minutes at the university's dorms, parking garage, and student union. The engineering department will conduct research to see how efficient the system is and to test out new technologies on the track in conjunction with the company that built the train, American Maglev Technology, based in Edgewater, Florida, and Dominion Virginia Power, which subsidized the installation costs.

More than $1.5 billion is spent each year in the US on low speed (slower than 80 kph) transit systems. Tony Morris, president of American Maglev Technology, says that Maglev trains, and his company's in particular, can grab 30% of this market because the operating costs of the system are not steep. For example, the electric bill for the Old Dominion track is projected to be $2 800 per month—less than the cost of diesel fuel used by the existing campus shuttle system.

The US project will not be alone for long. The first high-speed commercial Maglev train is scheduled to start up early next year in Shanghai, China. That $1.37 billion system will connect the Shanghai airport with the city's financial district 30 km away. Similar trains are being considered for a 1300-km track between Shanghai and Beijing, and several projects are in the works in the US, including a 40-km link between Baltimore, Maryland, and Washington, DC.

PAUL GUINNESSY

CHUCK THOMAS, OLD DOMINION UNIVERSITY

THE FIRST MAGLEV TRAIN, based on a decommissioned light rail car, is installed onto the track at Old Dominion University.

Physics Bachelors at Work

A physics bachelor's degree is good preparation for lots of different careers. That claim is oft repeated within the physics community, but now the American Institute of Physics has data to prove it. The first in a series of reports based on AIP's pioneering survey of people several years after graduation came out in August and focuses on the roughly one-third of graduates who hold no additional degrees and are not primarily students.

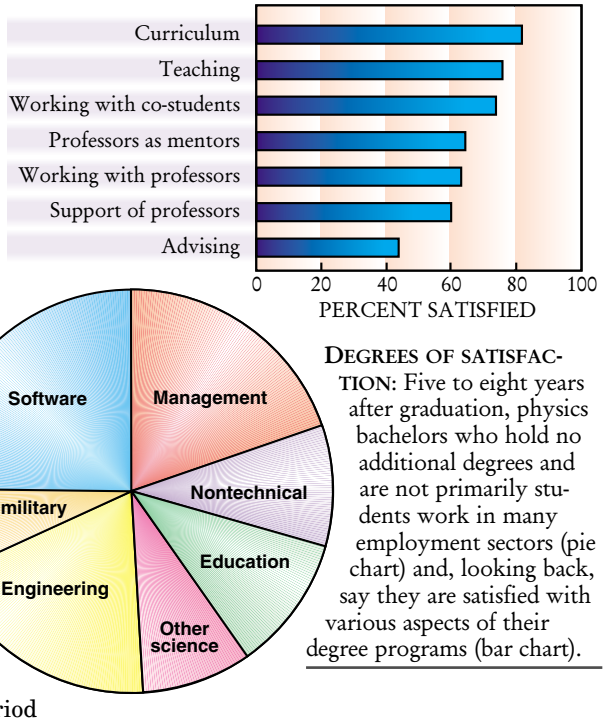
Conducted in late 1998 and early 1999, the survey involved people who received a bachelor's degree in physics from one of 149 US colleges and universities five to eight years earlier—in the period 1991–93, during what was, the report notes, both a nationwide recession and a boom time for the IT industry.

Of the 400 or so survey respondents whose highest degree is a bachelor's, 96% are employed, with 75% working in science-related jobs. The largest blocks are in software (24%), management (20%), and engineering (19%). Physics bachelors also work, for example, as teachers, as lab technicians, and in the military. And some 10% of them hold nontechnical jobs for which no college degree is required.

The bulk of the working bachelors use their physics training in their current jobs. Most said that it had prepared them well for such things as scientific problem-solving. But they overwhelmingly reported that their education had not adequately prepared them in terms of teamwork, oral communication skills, or—in the case of those working in software—programming. Sixty percent said they would major in physics if they had it to do again.

Five to eight years after graduation, 60% of the physics bachelors continued to work in the same area as their first "career path" job—defined in the survey as "a job that will help you in your future career or a job in the field in which you want to make your career." This, the report says, means that physics departments can play a potentially vital role in mentoring undergraduates through the process of landing their first real jobs.

These and other data are available in the *Early Careers of Physics Bachelors* report. Single copies may be obtained free of charge from AIP, Statistical Research Center, One Physics Ellipse, College Park, MD 20740; e-mail stats@aip.org; Web http://www.aip.org/statistics. Reports analyzing the data from the same survey of 1991–93 graduates to glean insights into the effects of physics departments, gender,



DEGREES OF SATISFACTION: Five to eight years after graduation, physics bachelors who hold no additional degrees and are not primarily students work in many employment sectors (pie chart) and, looking back, say they are satisfied with various aspects of their degree programs (bar chart).

and other factors on the early careers of physics bachelors are expected to be published in the next year.

News Notes

New S&T director at ONR. Physicist Jane A. "Xan" Alexander has been selected as the new executive director for science and technology at the Office of Naval Research in Arlington, Virginia. Alexander comes to the job from the Defense Advanced Research Projects Agency, where she was the deputy director. In announcing the selection, Rear Admiral Jay Cohen, Chief of Naval Research, said Alexander will "serve as the senior civilian for science and technology in the Navy." Alexander, who received the Department of Defense Distinguished Medal for Civilian Service in 2001, holds a PhD in physics from MIT. She succeeds Fred Saalfeld, who retired from ONR in December. —JLD

Ultrafast science journal. Physical phenomena that last a trillionth of a second or less are the focus of the new *Virtual Journal of Ultrafast Science*. Launched by the American Institute of Physics and the American Physical Society this summer, *VJUS* assembles research and review papers from 50 publications concerning anything ultrafast—from biophysics to high-field physics to applications. The University of Michigan's Philip Bucksbaum is *VJUS*'s founding editor. Produced in cooperation with 16 publishers, *VJUS* is the fifth in AIP and APS's series of specialty physics virtual journals. *VJUS* tables of contents and abstracts are posted monthly on the Web (see http://www.vjultrafast.org), with full texts of the original articles accessible for free to subscribers of the source journal, and for a fee to others. —TF

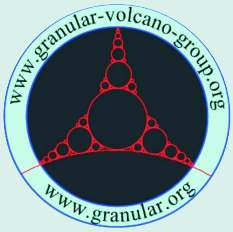
OSTP associate directors confirmed. Kathie Olsen, NASA's former chief scientist, and Richard Russell, former deputy chief of staff of the House Science Committee, were confirmed by the Senate in August as the associate directors of the Office of Science and Technology Policy. Olsen, who holds a PhD in biology from the University of California, Irvine, will head OSTP's science division. Russell, who has a BA in biology from Yale University, will be the associate director for technology.

Before she joined NASA in 1999, Olsen was the senior staff associate for NSF's science and technology centers. She did research on neural and genetic mechanisms underlying behavior while she was an assistant professor at SUNY Stony Brook, in the 1980s. Olsen's portfolio at OSTP will include environment; life and physical sciences; social, behavioral sciences, and education.

Russell was the chief of staff at OSTP for several months last year. From 1995 until he joined OSTP, he worked for the House Science Committee, serving as the staff director for the subcommittee on technology before being named chief of staff for the full science committee. He will be responsible for technology, telecommunications, information technology, and space and aeronautics. —JLD ■

Web Watch

http://www.granular.org



Doctoral student Sébastien Dartevelle, who studies physical volcanology at Michigan Technical University, curates the Web site of the **Granular Volcano Group**. The site seeks to explain and promote the understanding of granular processes, fluid dynamics, supercomputer modeling, and grain-size analysis as applied to volcanology, geophysics, and physics.

http://www.aip.org/statistics/trends/highlite/women/iupap.htm

Through its numerous tables and quotations, the report **Women Physicists Speak: The 2001 International Study of Women in Physics** illustrates the experiences of women physicists around the world. The Statistical Research Center of the American Institute of Physics put together the report for the working group on women in physics of the International Union of Pure and Applied Physics.

http://www.iupac.org/publications/compendium

The **IUPAC Compendium of Chemical Terminology** is published by Blackwell for the International Union of Pure and Applied Chemistry. Its more than 7000 cross-references provide, according to IUPAC, the definitive guide to chemical terminology. The online version is freely accessible.

To suggest topics or sites for Web Watch, please e-mail us at ptwww@aip.org.

Compiled by **Charles Day**