

steel wire mesh and steel rope trusses (see photo on page 73). This design, explains Swarup, "allows wind to pass through," and thus presents less wind resistance than would a solid dish. Moreover, the wire mesh dishes weigh less than solid ones, so that smaller—and cheaper—gear boxes and motors can be used to steer them. And, adds Swarup, the radio-wave reflection is good: "About 95% at the shortest wavelengths, and better for longer wavelengths."

To see how the antennas would hold up in a hailstorm, Swarup and his colleagues froze water-filled balloons, and then hurled them from a moving car at test panels made of wire mesh. "Nothing broke when we threw 2 cm ice balls at 70 km/hr," says Swarup, "and hail will not have a stronger force than that." Willem Baan, a radio astronomer at Arecibo Observatory in Puerto Rico, says, "GMRT will be an important telescope, and it is very impressive what they have done on such limited funds." Nearly all parts of GMRT were made in India.

GMRT will be used to observe a series of radio astronomy spectral lines, including the 1420 MHz atomic hydrogen line. Swarup, who is now emeritus but remains very involved, says that at this frequency, "We will look for supergalactic-sized hydrogen clouds to test Big Bang theory predictions regarding galaxy formation."

Swarup says that some of the antenna receivers will be modified in 1998 to extend the observation range of GMRT to include the 1612 MHz hydroxyl spectral line. This, of course, means that he and his colleagues are concerned about possible interference from the Iridium global mobile telephone system. "So far, it is relatively radio-quiet in India. It's an underdeveloped country, and even taxi drivers don't have walkie-talkies. But this is changing."

TONI FEDER

IUPAP General Assembly Held in Sweden

The International Union of Pure and Applied Physics (IUPAP) held its general assembly in Uppsala, Sweden, in September. Burton Richter, director of the Stanford Linear Accelerator Center and winner of the 1976 Nobel Prize in Physics, was elected president-designate. Sweden's Jan Nilsson moved from that position to become president,



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succeeding Japan's Yoshio Yamaguchi, now past president. And France's René Turlay was elected secretary general. The new office holders will serve until the next general assembly is held in 1999, in Atlanta, Georgia. Each has a seat on IUPAP's governing council.

IUPAP is a nongovernment organization and a member of the International Council of Scientific Unions (ICSU). It has 20 commissions (and 2 affiliate commissions) representing various physics fields, including a new commission for computational physics that was established at this year's general assembly. The assembly also approved a request by the acoustics commission to change its status next year to that of an affiliate—a change that will somewhat weaken its ties to IUPAP. "Acoustical societies have many nonphysicist members, and they need better international representation than IUPAP provides," explains commission member Lawrence Crum, of the University of Washington.

In addition, the assembly delegates, who represented member physics academies from about 45 countries, voted to give commission chairs seats on the council for the first time: 5 of the 8 seats that have always been for vice presidents were redesignated. The change was made so that the IUPAP council will get more input from the commissions, or, as Richter puts it, "from where the action is."

IUPAP sponsors about 30 international conferences each year. Nilsson, who has been active in IUPAP governance for nearly 25 years, says that he wants IUPAP to take a more active advisory and lobbying role in, for example, the setting of guidelines for the establishment and use of large international physics facilities (for which a resolution was passed in Uppsala). He also wants IUPAP to create interna-



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tional guidelines in communications and publications "to ensure a reliable flow of scientific information to all scientists, including in developing countries."

"During the cold war, IUPAP was a bridge for scientists between the East and West," says Richter. He and Nilsson agree that now the main aim is to figure out what IUPAP's role in the future should be, and to set new long-term goals.

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AIP Surveys Find Enrollment Losses, Salary Gains

US enrollments in physics continued to fall in 1995, but at least some physics degree recipients commanded higher starting salaries than in the previous year, according to two surveys recently released by the American Institute of Physics.

According to the graduate student survey, there were about 13 300 physics graduate students in the US in 1994–95, down 6% from the previous year; that group included a first-year class of 2600, which was 10% smaller than in 1993–94. A total of 1461 physics PhDs and 985 master's degrees (excluding a master's earned en route to a PhD) were conferred in the US during the 1994–95 academic year. Women comprised about 16% of the graduate student population, 17% of master's degree recipients and 12% of PhD recipients.

Among the PhD recipients who found work in the US, 59% accepted postdoctoral appointments and 9% took temporary positions other than postdocs. Of the remaining 32% who