AIMS

The African Institute for Mathematical Sciences campus in the seaside Cape Town suburb of Muizenberg, South Africa.

JULES BARUANI

Neil Turok (center), founder and chair of the African Institute for Mathematical Sciences, with some of the institute's students. From left to right are Guy Lusilao-Zodi, Jules Baruani, Johnny Lokake, and Tony Nzundu.

"Source of bright people"

"The biggest contribution we can make towards addressing poverty is ensuring that our people are skilled and that they have a good foundation in math and science," says Nhlanhla Nyide, science communications director for South Africa's Department of Science and Technology. The DST is emphasizing graduate education in a 10-year innovation plan it rolled out this year, which, among other things, calls for doubling the number of science, engineering, and technology PhD graduates from South African universities by 2018. Centers such as AIMS and the new South African theoretical physics institute (see box below), both supported by the DST, will be essential to that effort, says Nyide. "If we let only the developed countries do the basic research, we would just be basically committing suicide because we will always have to rely on them for new knowledge."

Although AIMS has introduced more visiting black African students to the South African physics community, it has a poor record of attracting black South African students to its program, says Nithaya Chetty, president of the South African Institute of Physics. "There are no South African students around," says Hahne. "The few are being sought by industry and other businesses because there is such a huge skills shortage from the historically disadvantaged communities." Elementary- and high-school math and science education is a problem that needs "very serious attention," says Chetty, "[but] the challenge we face is that we've got to simultaneously address our needs and aspirations at multiple levels of the education system."

"It's about seeing Africa as a source of bright people, and not just as a problem," says Turok, whose parents were imprisoned in South Africa for resisting apartheid when he was three years old. Last year Turok told the AIMS incoming class that the next Albert Einstein can and should come from Africa. That idea, he says, came from a discussion he had with the granddaughter of physics Nobelist Max Born; she noted the number of fundamental contributions made by Jewish scientists in the 20th century after they were permitted full participation in European universities starting in the late 1800s. "We as African students just need good learning facilities," says Ibrahim Nsanzineza, an AIMS student from Rwanda. "Poverty is the only challenge we face in becoming African Einsteins. Otherwise we have everything else needed to become so."

Jermey N. A. Matthews

Theoretical physics in Africa

The National Institute for Theoretical Physics (NITheP) opens its doors this month in the town of Stellenbosch, about 50 km east of Cape Town, South Africa. The institute is one response to the 2005 report *Shaping the Future of Physics in South Africa*, in which an international panel of physicists recommended that it be established "to respond nimbly to national science policy initiatives." The main center for NITheP will be located on the campus of the Stellenbosch Institute for Advanced Study. Two other regional centers have been established in the country at the universities of KwaZulu-Natal and the Witwatersrand.

The Kavli Institute for Theoretical Physics in Santa Barbara, California, has served as a model for NITheP, says interim director Hendrik Geyer; David Gross, KITP director, will give the NITheP inauguration talk. Citing the need for more graduate courses in theoretical physics, Geyer says, "We foresee that we will be actively engaged in graduate-level teaching." Researchers from NITheP will also work with students at the African Institute for Mathematical Sciences near Cape Town (see the story on page 25).

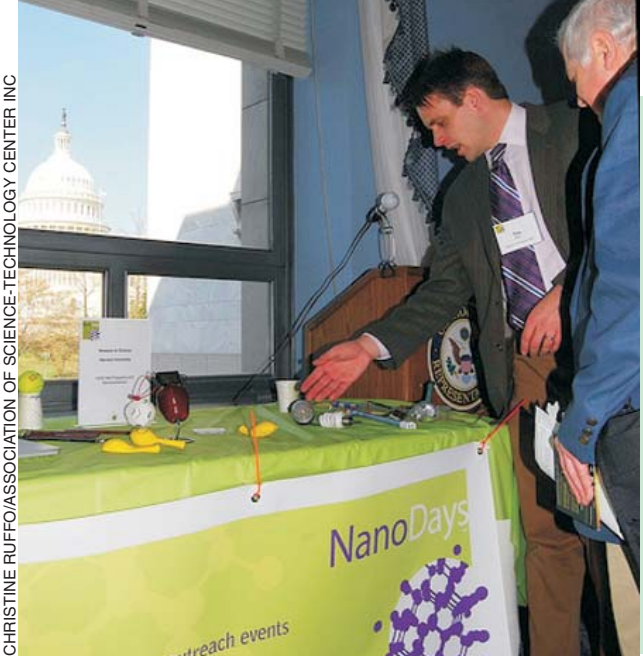
JNAM

Nanoscience outreach rolls out nationwide

"The NanoExpress is a mobile scientific theme park," says Gary Harris, electrical engineering professor at Howard University and director of the trailer-turned-laboratory that its scientists use to explain how atomic force and electron microscopes work. "We go wherever people are interested in learning about nanotechnology."

On 2 April the trailer was parked outside the Rayburn House Office Building in Washington, DC. Inside the building, congressional staffers, science policy advocates, and others watched video clips of role-playing dialog exploring the societal and ethical implications of nanotechnology (see http://www.powerofsmall.org) and used a vibrating joystick to simulate the forces of an atom moving across a surface.

The stop on Capitol Hill was part of the first nationwide NanoDays, a week in which some 100 or so museums and universities carried out educational activities organized by the Nanoscale Informal Science Education Network.



CHRISTINE RUFFO/ASSOCIATION OF SCIENCE-TECHNOLOGY CENTER INC

NanoDays educational activities were performed in the Rayburn House Office Building by Tim Miller, education associate at the Museum of Science, Boston.

NISE Net was funded by NSF in 2005 and has grown from three founding partner museums to more than a dozen partner museums and universities. The White House Office of Science and Technology Policy advocated "continued support for efforts such as NISE Net" in the 2007 National Nanotechnology Initiative Strategic Plan, the document that will guide reauthorization hearings for NNI this year.

"One of the reasons that faculty have been hesitant to get involved in outreach is because of the huge time commitment involved to do it right, but interest goes way up once people have prepared tools that can make an impact," says Ellen Williams, director of the materials research science and engineering center at the University of Maryland, College Park, which hosted a NanoDays open house for local elementary- and middle-school students. "The NanoDays kits are wonderful," she adds, referring to the supplies and instructions put together by NISE Net staff for six nanoscale hands-on activities.

Some NISE Net partners put on original shows. The Museum of Science, Boston, presented *The Amazing Nano Brothers Juggling Show*—an original script by NISE Net principal investigator Carol Lynn Alpert in which two comic performers act out the behavior of matter at the nanoscale by jointly juggling macroscopic objects, sometimes while riding 2-meter unicycles.

"When I came to the Museum of Science 37 years ago from MIT, all I could do was draw formulas on a blackboard, so I had to learn how to explain things by using analogies, similar objects, and common experiences," says physicist and lead NISE Net principal investigator Larry Bell. "I'm now a bit surprised that we can actually gather a small group of people and keep them for 15 to 20 minutes while we talk about nanotechnology, which they can't see and which has a level of complexity that makes it hard to understand."

Jermey N. A. Matthews

Polish cosmologist wins religion prize

Catholic priest and cosmologist Michael Heller is this year's winner of the Templeton Prize. According to the Templeton Foundation, which bestows it, the prize is intended to "serve as a philanthropic catalyst for discovery in areas engaging life's biggest questions, ranging from explorations into the laws of nature and the universe to questions on love, gratitude, forgiveness, and creativity." The Templeton Prize is the largest annual award to an individual and was designed to have a bigger purse than the Nobel Prize. This year it is worth about $1.6 million.

Heller, a member of the philosophy faculty at the Pontifical Academy of Theology in Krakow, Poland, first became a priest and then studied physics. Although he served in a parish at one time, he now pursues both interests as a scholar. He began his scientific career looking at dissipative processes in cosmic evolution. Today his focus is on using noncommutative geometry to construct a theoretical model to unify gravity and quantum mechanics. On the religious side, he says, "My idea is not so much philosophy of science, but philosophy *in* science." Time, space, causality,