

The primary mirror of the Thirty Meter Telescope will be made from 492 hexagonal segments each 1.4 meters in diameter (below). The first of seven 8.4-meter mirror segments that will make up the Giant Magellan Telescope's primary mirror (right) is polished by a stressed lap, which deforms as it moves across the asymmetric surface called for in the telescope's off-axis design. (The TMT image artist rendering is courtesy of the TMT Observatory Corp.)



in the giant telescopes. For example, he adds, the giant telescopes could coordinate with the *JWST*. "That's an all-sky instrument, and it seems foolish to throw away a third or more of the sky. You become the myopic astronomer."

Government participation?

For both the TMT and the GMT, going forward depends on amassing more money. The Gordon and Betty Moore Foundation has pledged \$200 million to the TMT, on condition that UC and Caltech each raise an additional \$50 million (see *PHYSICS TODAY*, March 2008, page 20). A consortium of Canadian universities is the third partner in the project, and Japan is considering signing on. The GMT's partners—eight US institutions and Australia, with South Korea poised to join—each aim to contribute \$60 million; Houston businessman George Mitchell is one donor to the project. For the US-led projects, raising money for operations is harder than for construction, whereas the opposite is true for the EELT because of member nations' dues to the parent European Southern Observatory.

A 50% share in an extremely large telescope was the top-ranked ground-based priority in the last US decadal survey. The US could get equivalent ac-

cess through quarter shares in both the TMT and the GMT, but many astronomers doubt the US would spring for two. Indeed, they worry that participation in even one giant telescope may be out of reach. Others, though, note that before any 8- or 10-meter telescopes were built, many people believed only one was affordable; today there are a dozen.

"I do think it's feasible [for the US government] to join both at the 25% level," says Freedman. "There are many advantages to having two large telescopes." And, with the EELT in the works, says the Carnegie Institution's Patrick McCarthy, who heads the GMT's science advisory committee, "If we want to maintain anything like parity—it will still be stretching to get that—both [the GMT and the TMT] projects need to succeed."

But Carney cautions that a balance is needed between the new diffraction-limited telescopes and still serviceable smaller facilities. "There is not enough talk about better instruments for existing telescopes," he says. At this point, says Wayne Van Citters, a senior adviser in NSF's mathematics and physical sciences directorate, "NSF has to await the outcome of the decadal survey before making up its mind. We've

told the community that many different paths might be possible."

It's not just for the money that the US-led teams want their government on board. "You can draw on the brain power of a much larger group of people," says Silva. Adds Freedman, "It would be dreadful to go back to a time when telescopes are in the hands of a small group of private institutions and the general population doesn't have access to them."

Toni Feder

O'Riordan takes VP reins at AIP

This month ocean scientist Catherine O'Riordan becomes the new vice president of the Physics Resources Center at the American Institute of Physics. In that post, she will direct AIP's statistical research, history, education, media and government relations, magazines, and industrial outreach programs that serve 10 member societies, the public, and the corporate sector. The magazines division produces *PHYSICS TODAY*. O'Riordan replaces former physics professor James Stith, who announced his retirement earlier this year following 10 years at AIP.

O'Riordan, who holds a doctorate in civil engineering from Stanford University and specializes in environmental fluid mechanics, was director of science development and education at the Consortium for Ocean Leadership, a nonprofit organization that represents



JON CORSIGLIA

O'Riordan

Students go for gold at physics olympiad

More than 380 high-school students representing 82 countries traveled to Vietnam in July to compete in this year's International Physics Olympiad. Many took time to sightsee in Hanoi and around the countryside. "The experience in Vietnam was great . . . and the Vietnamese [people] were very hospitable," says high-school physics teacher Robert Shurtz, co-academic director of the US team. The US students, who were jointly sponsored by the American Institute of Physics and the American Association of Physics Teachers, also blogged their experiences at <http://aapt-phycsteam.blogspot.com>, telling of encounters with students from other teams and posting photos of their excursion down tourist-favorite Ha Long Bay.

The 39th olympiad, however, was not all fun and games. Medals were at stake for experimentally determining the efficiency of a solar cell and explaining the theory behind the mechanics of a Vietnamese water-powered, rice-pounding mortar. The theory question stumped many of the students and caused angst among their coaches.

The Chinese and Taiwanese teams tied for first place, with each earning five gold medals. China's Longzhi Tan received the highest overall score. Improving on their fifth-place finish from the 2007 contest, the US team tied with India and South Korea for second place, earning four golds and a silver. Claiming gold for the US were Tucker Chan of Princeton, New Jersey; Edward Gan of Silver Spring, Maryland; Joshua Oremán of North Hollywood, California; and Danny Zhu of New York City. Returning contestant Rui Hu of Newark, Delaware, missed gold by 0.2 points and took home a silver medal for the second time.

"I am very proud of the accomplishment and more than a little surprised by it, especially since this is my first year studying physics," says Oremán. Prior to attending the US physics team training camp, Oremán admits that he had never "even entertained notions" of majoring in physics. Now he's considering it. "Competing in the [olympiad] has shown me the richness of the field," he adds.

Hans Jordens, a theoretical physicist at the University of Groningen in the Netherlands, was elected president of the International Physics olympiad at the event. He is the full-time successor to longtime president Waldemar Gorzkowski, who died during last year's Olympiad. This year's competition preceded the Summer Olympics held last month in neighboring China, whose team wore Beijing 2008 T-shirts at the olympiad. Unlike the summer games, "physics is not a spectator sport," says Chan, who views the tournament as an opportunity to build friendships.

Jermy N. A. Matthews



The US physics team that competed in the International Physics Olympiad in Vietnam were represented by (front row from left) Rui Hu, Edward Gan, Tucker Chan, Joshua Oremán, and Danny Zhu; their team leaders included (back row from left) Paul Stanley (Beloit College, Wisconsin), Warren Turner (Westfield State College, Massachusetts), and Robert Shurtz (Hawken School, Ohio).

95 private and public ocean research institutions. Prior to that, she managed society and public affairs programs at the American Geophysical Union for eight years. O'Riordan says that her experiences at AGU familiarized her with AIP's internal management structure and Governing Board. "I wanted to get back to working with associations," she says. "Associations are unique environments, like a grassroots community that scientists build, and then the staff works on programs that provide services back to those scientists."

Among the biggest challenges O'Riordan says she will face is to deliver products and programs to the physics community and the public at a time when journal subscriptions, AIP's primary revenue, are stressed by changing market conditions. "We need to diversify our portfolio," she says, noting that the Physics Resources Center could address budget concerns by further engaging in joint programs with the member societies and by obtaining public and

private grants in a way that does not interfere with fundraising by the societies. O'Riordan also plans to work with the member societies on initiatives to improve diversity in the physics community and to expand AIP's services to scientists outside the US. She would also like to strengthen the ties between the statistical research division and the industrial outreach program by providing workforce and career statistics that AIP's corporate affiliates find valuable. "My impression is that we have great resources and that maybe we can do some more things to help the [industrial] community," she says.

Prioritizing physics programs that often compete for the same resources will require the same thoughtful and measured style of leadership that Stith, a retired army colonel, demonstrated, says O'Riordan. Stith, who says he's "retreading, not retiring," plans to take a few months off before considering other long-term roles. He intends, however, to continue in current roles as ad-

viser and board member for several science organizations and as an advocate for diversity in the physics community. A key to AIP's future success, Stith suggests, will be to continue to build broad coalitions with other scientific organizations; during his tenure, for example, AIP built and led a partnership of 23 other organizations that manage the *Discoveries and Breakthroughs Inside Science* program, which annually produces 144 public information science video features for television.

Jermy N. A. Matthews

US skips "Physics World Cup," holds its own contest

Declaring that the middle of May is "an impossible time for US high schools to participate," US organizers declined to send a team to Croatia to compete at the International Young Physicists'