degrees in mathematics. Alongside its Research Experiences for Undergraduates program, the department has started REU+, which is geared toward students from historically black colleges and universities. At the postdoctoral level, the department has spearheaded a new national program called the Alliance for Building Faculty Diversity in the Mathematical Sciences, which offers postdoctoral fellowships to new Ph.D.s from traditionally underrepresented groups. Fellows will typically spend two years in one of the alliance institutions and one year in an NSF-funded mathematics institute.

After NC State was chosen for the AMS Exemplary Program Award, department head Loek Helminck was interviewed for an article in the Notices. Asked how the department managed to achieve so much, he replied: “You have to create a culture in which people believe this is the right direction for the department so that there is broad faculty participation. You start with a few people and you show that a program is successful, then one by one you have faculty start to participate...They can totally change their minds.”

Department head: Loek Helminck
Website: [http://www.math.ncsu.edu](http://www.math.ncsu.edu)

2011 Award for an Exemplary Program or Achievement in a Mathematics Department

The Award for an Exemplary Program or Achievement in a Mathematics Department was established by the AMS Council in 2004 and was given for the first time in 2006. The purpose is to recognize a department that has distinguished itself by undertaking an unusual or particularly effective program of value to the mathematics community, internally or in relation to the rest of society. Departments of mathematical sciences in North America that offer at least a bachelor's degree in mathematical sciences are eligible. Through the generous support of an anonymous donor, the award carries a cash prize of US$5,000.

The award is presented by the AMS Council acting on the recommendation of a selection committee. For the 2011 award, the members of the selection committee were: Carlos Castillo-Chavez, Amy Cohen (chair), William Jacob, and Philip Kutzko.

The previous recipients of the award are Harvey Mudd College (2006), the University of California, Los Angeles (2007), the University of Iowa (2008), the University of Nebraska, Lincoln (2009), and North Carolina State University (2010).

The recipient of the 2011 Award for an Exemplary Program or Achievement in a Mathematics Department is the MATH CENTER AT THE UNIVERSITY OF ARIZONA. What follows is the selection committee’s citation.

Citation

The American Mathematical Society is pleased to recognize the undergraduate Math Center at the University of Arizona with the 2011 Award for an Exemplary Program or Achievement by a Mathematics Department. The Math Center is a national leader in the effort to recruit, mentor, and graduate undergraduate math majors, especially those students from backgrounds traditionally underrepresented in mathematics. Since 2004 the Math Center has

- increased the total number of majors by 69 percent, from 281 to 474,
- increased the total number of female majors by 72 percent, from 102 to 175,
- increased the total number of majors from underrepresented minority groups by 125 percent, from 48 to 108, with the result that about 25 percent of math majors at the University of Arizona come from these groups.

This impressive achievement comes about not as a result of any substantial change in the structure of the math major but rather by the tireless recruitment activities of the Center, the range of activities and opportunities provided to UA math majors, and the collegial and welcoming environment created by the Center. Recruiting is done on a personal basis. There is a yearly high school calculus class visitation project in which a team consisting
of a faculty member, a graduate student, and an undergraduate student visits AP calculus classes at local high schools. There is an MAA-[Mathematical Association of America] funded five-day calculus workshop for incoming students enrolled in calculus. And, perhaps most remarkably, there is the personal effort of Professor William Vélez, Associate Head for Undergraduate Affairs for the UA Math Department, who has, for the last fifteen years, conducted a program of making twenty-minute individual appointments with every minority student enrolled in calculus. Once a student becomes a math major, the Center offers a variety of programs, ranging from a substantial undergraduate research program to a highly popular math club to encourage and support the student’s progress toward success. Finally, a concerted effort is made to ensure that the student is informed of the full range of opportunities available in academe, government, and industry to someone with computational skills. Indeed, since 2007 the program has broadened its scope to target students in other fields who might be interested in a double major, thus increasing the fraction of double majors from 30 percent to 40 percent over the last three years. The numbers show that this program is succeeding: over the last two years, about a quarter of UA math majors have gone on to graduate programs, and almost 20 percent have gone into middle and high school teaching. As further evidence of this success, the May 2010 outstanding undergraduate researcher and the December 2010 outstanding graduating senior in the College of Science were both math majors.

The small numbers of women and minorities at all levels in our profession, together with an increasing alienation of all U.S. students from the mathematical sciences, is well documented and is cause for concern both on moral and on practical grounds. In that context, the Math Center at the University of Arizona stands out both as an example of what can be done and as a model of what must be done, the very definition of an exemplary program.

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**About the Cover**

**Wavelets in image compression**

This month’s cover was inspired by the article “Discrete wavelet transformations and undergraduate education”, by Catherine Bénéteau and Patrick Van Fleet. The February 2008 issue of the Notices contained an article by David Austin on the JPEG format, including at the end a few remarks about the newer JPEG2000 specification, which is based on wavelets. This month’s cover illustrates what the first step in a simple wavelet compression would be like, when applied to Austin’s cover for the 2008 issue. The effect is much like one of the figures in the article by Bénéteau and Van Fleet.

In making the cover, we considered several sophisticated options, but in the end chose to apply Haar wavelets for a simple visual effect. Wavelets are complicated, and it would have been almost impossible to make a single cover image that showed clearly something more subtle. There is no natural way to interpret differences of colors graphically. Magnitudes in the difference images have been shifted and magnified in order to make the process more visible, and this has introduced some apparently random noise.

Although in the end we didn’t use anything fancy, we found the book *Ripples in Mathematics*, listed in the Bénéteau and Van Fleet article, as well as the article “Factoring wavelet transforms into lifting steps” by Ingrid Daubechies and Wim Sweldens (*Journal of Fourier Analysis and Applications*, 1998), to be valuable guides to the lifting algorithm.

—Bill Casselman

Graphics Editor

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