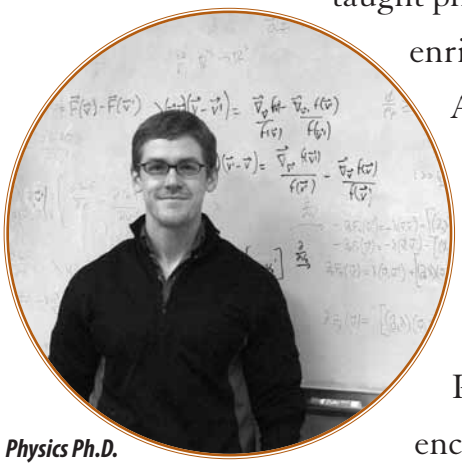
Student Profile

Matthew Landreman, Ph.D. Candidate, Plasma Physics



Physics Ph.D. candidate Matt Landreman

Using his talent and love for physics and math to help others has long been an important part of Matt Landreman's life. While an honors student at Swarthmore College majoring in physics and mathematics, he taught physics classes for two years at Upward Bound, a Saturday enrichment program for low-income high school students. As a 2003 Rhodes Scholar at Oxford University earning an M.Sc. in atomic and laser physics, Matt taught physics for the Oxford Access Scheme program, created to encourage underrepresented minority students to apply to Oxford. Now an MIT graduate student in plasma physics with Prof. Bruno Coppi's group, Matt remains dedicated to encouraging a love of physics and math in today's youth and works on behalf of several programs that bring science and technology education to young people of the developing world.

Recently, while coordinating volunteer efforts for textbook donations to developing countries (the Sabre Foundation) and founding ASPIRE (American Students Promoting Iraqi Education), Matt taught high school physics and math in Zambia on behalf of the international science outreach organization Cosmos Education. As he enters the final phase of his Ph.D. studies, Matt plans to stay involved with these and similar programs.

physics@mit: Matt, community service has been an integral part of life at MIT, for students, staff and faculty, since its very inception. Has your time spent as an MIT physics graduate student been influenced by this tradition, and if so, in what way?

Matt Landreman: When I arrived at MIT, I was delighted by the variety and quantity of opportunities available for outreach and service. For example, I could subscribe to the MIT Public Service Center email bulletin (*web.mit.edu/mitpsc/showcase/bulletin*) for a weekly listing of volunteer and outreach opportunities in the Cambridge area. As you might expect, many of the listings related to science or technology in some way, such as programs to teach basic computer skills to immigrants and senior citizens, and to record science books-on-tape for the blind.

The dedication to service of the MIT community is indeed impressive, and it has made the ASPIRE project a resounding success. Thanks to the hard work of our student and staff

volunteers, many of whom are from MIT's physics department, last year we were able to send 25,000 brand new science, medical and engineering textbooks to universities in Iraq, Liberia, Uganda and other post-conflict countries. By the way, we always welcome new volunteers; those who're interested can find more information at *web.mit.edu/mitaspire*.

physics@mit: While teaching high school students in Zambia, you created several "low-tech" experiments for your physics classes. Where there any classes or faculty here at MIT physics which particularly inspired you or served as models for your own teaching?

Matt Landreman and his colleagues at the Munali Secondary School, Zambia. *From left: Matt, Damian Smith, Carol Lo, Mark Zulu and Munali science teacher Mr. Ndumba.*

Matt: Professor John Belcher suggested one technique, which I ended up using in Zambia. He and other TEAL (Technology-Enabled Active Learning) instructors give students electronic "clickers," with which the students respond to multiple-choice questions during the lectures. This system both keeps the students on their toes and gives the lecturer real-time feedback. In Zambia, given the limited resources of schools, a low-tech version of the system was more appropriate. Instead of handing out clickers, I gave each student a set of five paper cards, each with a single letter from 'A' through 'E' on one side, which the students could hold up for me to see when I posed a multiple-choice question. The paper system had the same advantage as the electronic clickers: students could respond to questions without being influenced by their classmates' answers.

physics@mit: As you complete your Ph.D. research at MIT's Plasma Science and Fusion Center and prepare for the next step in your career, will your volunteer work on behalf of youth in the developing world influence your future direction? If so, in what way?

Matt: As I continue my research and teaching in plasma physics, I do intend to stay involved in this sort of volunteer work. MIT physics alumni are in a unique position to inspire kids and share their expertise in quantitative reasoning, not only abroad but also here in the U. S. For instance, almost any science teacher in any school in the country would love to have someone with an MIT physics degree give a guest lecture to their students.

Also, for MIT physics alumni who stay in academic research, here's one easy step to take: if you plan on traveling to one of the world's developing countries, consider contacting a local university and offer to give a colloquium during your trip. The faculty and students there will be very appreciative, as universities in these areas don't have the wealth of visiting researchers that we can take for granted here in the U. S.