



meet Marta

MATERIALS AND LASER PHYSICS

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If physicist Marta Dark McNeese is successful, one day her research could be used to help injured athletes compete again.

Marta is using physics to develop a laser-based method to repair injuries in knee cartilage, commonly caused by sports injuries. She is also a professor at Spelman College, a historically black women's college.

Marta grew up in a suburb outside Washington, DC. She remembers being interested in math and the sciences as early as fifth grade. “I liked the idea that there was a process to learn and problems to solve in math and science, and I remember thinking of other topics, like history, as dates and things to memorize,” she said. Marta especially liked astronomy, and by the time she was 11 she had asked her parents for and received a telescope. She first realized she was interested in physics during a physical sciences class in eighth grade. She loved studying rocks, volcanoes and magnetic forces. She also liked that her instructor was an African-American woman, whom she could identify with.

Marta soon knew she wanted a career in science or math. With her parents' encouragement, she applied to a high school with a special science and math program and was accepted. While there, she took a number of different science classes, but found she didn't like biology because of the requirement for dissection, and since she had a fear of chemicals, chemistry was out. “So physics was the one for me,” she said.

After high school, Marta went to the University of Virginia. Within a few years at the school, she decided she wanted a degree in physics, and through a special summer program and class, she discovered she was fascinated with optics, the movement of light, and lasers.

After getting a bachelor's degree, Marta went to the Massachusetts Institute of Technology. It was there that she first began studying lasers and knee cartilage. Soon after she got her doctorate from MIT, Marta came to Spelman College, where she has been for the past



seven years. At Spelman, Marta continues her research on knee cartilage. She is trying to create a special protein-based glue with certain chemicals added to strengthen it. She would then use a laser to “weld” the glue to the damaged knee cartilage, repairing tears and strengthening the cartilage. She also has to figure out a way to keep the heat from the laser from damaging the cartilage.

Marta spends the rest of her time at Spelman teaching physics and astronomy classes, and helping students understand how fascinating physics can be. Spelman is “a wonderful environment for me and I really wanted to be there so I could encourage young black women to go into the sciences,” she said. Sometimes she presents science fiction movies in class to help her students better understand physics. Marta uses the movie Armageddon, and shows students “that the whole premise of the movie is flawed,” from a physicist's perspective. The approach is so popular that incoming students will often ask her if she plans to do it again.

But despite her best attempts, Marta sometimes sees students who don't understand why she finds physics fascinating. This is what she tells them: “You're really trying to understand how the universe works. What could be more exciting than that?”