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## EMU Mathematical Sciences Department

### Fall 2009

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## Dr. Dee A. B. Weikle Fills CS Position

After a year and a half of searching for a computer science faculty member, we are pleased to welcome Dr. Dee A.B. Weikle to the Mathematical Sciences Department. Dee Ann Burgess Weikle graduated from Rice University with a Bachelor's of Science in Electrical Engineering in 1985. She subsequently worked as an engineer at Tracor Aerospace and then Motorola Semiconductor in Austin, Texas. After leaving Motorola for a year in Sweden, she moved to Charlottesville, Virginia in 1993 where she completed her PhD in Computer Science at the University of Virginia, specializing in computer architecture with an emphasis on memory system analysis and design. During this time her three children were born.

From 2001-2002, Dee spent another year in Sweden with her family. On returning to the Charlottesville area, she continued to work for the University of Virginia as an adjunct professor, research scientist and consultant to the Curry School of Education. Dee is an active member of Westminster Presbyterian Church in Charlottesville Virginia where she has been involved in both the Peace and Justice Committee and Christian Education. In her spare time, Dee enjoys Bikram yoga, hiking, crocheting and cooking with her children. Dee reports that she is happy to be a part of the EMU community where she is fulfilling her life-long dream of teaching. Dee will begin by teaching two classes this spring semester before picking up a full-time load in the fall.

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## Christian Faith and Physics

The following excerpt is from a paper **Dr. Leah Boyer** wrote as part of the contract renewal process about her integration of faith and academic discipline.

### The light and Jesus:

"I am the light of the world. Whoever follows me will never walk in darkness, but will have the light of life." John 8:12

“While I am in the world, I am the light of the world.” John 9:5

“I have come into the world as a light, so that no one who believes in me should stay in darkness.” John 12:46

Jesus claimed He is the light many times in the book of John. In physics, light and sound are the two most popular waves. When I introduce the waves in Physics I, I discuss the properties of light with students to see why Jesus claimed He is the light.

What is light? Light is strange stuff. It is all around us, yet we cannot grasp it, hold it in our hands, take it apart and examine it. Sir Isaac Newton produced the first truly scientific work about the light in 1700: light was composed of streams of particles because it travels in straight lines. Then in 1801, a young English scientist named Thomas Young did an experiment to show that light does not always travel in strictly straight lines. Under certain conditions, light rays bend slightly around an obstacle. That suggested that light was made up of waves just like sound wave<sup>1</sup>. Those two contradicting ideas confused many scientists for more than a hundred years. In 1905, Albert Einstein discovered the nature of light: light was made up of neither waves nor particles alone; it somehow managed to be both simultaneously. That hardly seemed possible. Scientists had always thought of wave and particle as two mutually exclusive categories. A grain of sand never showed any wave characteristics; an ocean wave never condensed into solid particles. But now Einstein was telling them that light was somehow made up of both. As the evidence mounted, scientists realized that they had no choice but to accept the paradoxical conclusion that light did have both wave and particle characteristics<sup>2</sup>.

One of the greatest mysteries in the Bible for me is to understand the trinity: God is three in One: sometimes the Father, sometimes the Son and sometimes the Holy Spirit. Even though I still don't understand, I accept it.

Light has the highest speed ( $3 \times 10^8$  m/s) in the universe: nothing in universe can attain or exceed that velocity. Jesus claimed He is the light, inferring the supreme of God. The sound speed in air is about 334m/s. There are some airplanes which already exceed this speed.

The energy for our kind of life is light. All the living creatures on Earth's surface depend on the Sun's light for their ultimate source of energy. Without sunlight, life on the surface of our world—and in all but the deepest abysses of the oceans, as well—would be snuffed out completely. For human beings, Jesus is the light in our life. Before I knew Jesus, my life was filled with darkness. I was scared of death. I worried about almost everything: today, tomorrow, near future and far away future. After I became Christian, even though I still go through trouble times, I know I have hope in Jesus; He will help, provide and carry me through. I believe something good can get out of the bad. Without Jesus, I was snuffed out completely long time ago.

In 1905, Einstein proposed the Special Theory of Relativity, with which he won the 1923 Physics Nobel Prize. “Light is always propagated in empty space with a definite velocity  $c$  which is independent of the state of motion of the emitting body”. Relativity predicts the increase of mass with velocity, the slowing down of time, the contraction of length and so on, but light speed can never change. This can be compared with the eternal of God. Sound speed will change when traveling through different media.

Light has to be received. If you are hiding in a dark room, close the windows and the door, the light outside couldn't come in. In order to receive the light, you have to open the door. “Here I am! I stand at the door and knock. If anyone hears my voice and opens the door, I will come in and eat with him, and he with me.” Revelation 3:20.

To the astronomers, light is the messenger carrying information from the stars. It can also be used to measure the incredible distances of space by using the speed of light as a benchmark. Jesus is the messenger carrying information from Heaven. “In the beginning was the Word, and the Word was with God, and the Word was God.” John 1:1. “The Word became flesh and made his dwelling among us.....” John 1:14. “No one has ever seen God, but God the One and Only, who is at the Father's side, has made him known.” John 1:18.

1. Morris, Richard. Light. New York: The Bobbs-Merrill Company, Inc., 1979.

2. Bova, Ben. The Beauty of Light. New York: John Wiley & Sons, Inc., 1988.

## Department News

Congratulations to **Elias Kehr**, this year's recipient of the Brenneman-Longacher Endowed Mathematics Scholarship. Elias is a first-year student from Goshen, Indiana, pursuing a mathematics major with secondary education licensure. Elias has chosen to study mathematics because he likes dealing in logic; becoming a math teacher will allow Elias to make a positive contribution to society while working in the subject he most enjoys. In his free time, Elias can be found following Vikings football, playing sports and video games, or kicking back in his armchair with friends. As the recipient of the Brenneman-Longacher Scholarship, Elias will receive \$1250 per year for four academic years.

## Problem Corner

The following individuals gave the correct answer of  $\pi/8$  for our Spring 2009 geometric probability problem: David Lehman, Craig West, Doug Ameigh, Denton Yoder, Kevin Nafziger, Mark Harder, John Snyder, Ellis Detwiler, and Jesse Blosser.

### New Problem:

A man rides a bicycle through a puddle of water and a bit of mud is thrown from the rear wheel landing on the top of his head. Supposing that the wheel is 28 inches in diameter, that the man's head is 6 feet above the ground, that the saddle is 1 foot in front of the rear wheel, and that the mud left the wheel at a point 60 degrees from the highest point of the wheel, how long will it take the man to ride one mile at this rate?

(From the January 1901 issue of the American Mathematical Monthly courtesy of John Snyder.)

Submit solutions to Owen Byer at [byer@emu.edu](mailto:byer@emu.edu).

### *What have you been doing since leaving EMU?*

Send your personal and professional updates to Deirdre Smeltzer at [smeltzed@emu.edu](mailto:smeltzed@emu.edu).

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Editor: Charles Cooley  
[cooleycd@emu.edu](mailto:cooleycd@emu.edu)