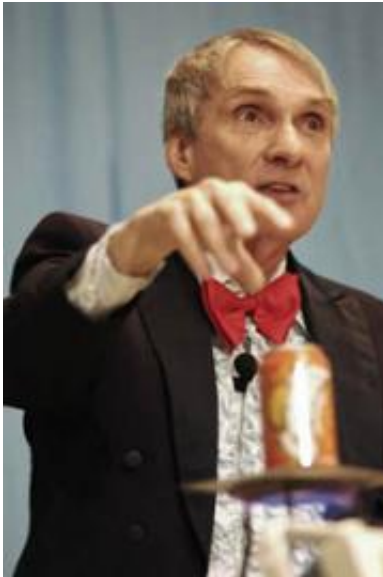


Professor shows the 'wonder-full' side of physics

July 13 2010, by Jill Sakai



Physics professor J. Clint Sprott demonstrates the effects of temperature causing a can to collapse during a Wonders of Physics event. Sprott puts on multiple shows in February each year and also does demonstrations around Wisconsin and beyond. The Wonders of Physics has been a popular program since 1984. Photo: Jeff Miller

(PhysOrg.com) -- The audience laughs and applauds as the performers on stage pull trick after trick from their sleeves: suspending a ball in midair, defying gravity, turning water into ice right before people's eyes. But this isn't a magic show - it's physics.

Clad in his signature tuxedo, J. Clint Sprott has a full house wowed with catchy visual demonstrations of waves, friction and Newton's laws. In his show "The Wonders of [Physics](#)," the University of Wisconsin-Madison professor emeritus of physics combines science and theatrics to show people how physics permeates everyday life.

Sprott started "The Wonders of Physics" program in 1984 after being inspired by UW-Madison chemistry professor Bassam Shakhshiri's popular annual chemistry outreach show "Once Upon a Christmas Cheery in the Lab of Shakhshiri."

"It wasn't something I set out to do," Sprott says. "A friend invited me to go to one of his Christmas lectures. I'd heard about them but never gone. I couldn't see how a chemistry lecture could be very exciting. So I went, and the thing that amazed me was how excited the audience was... Everyone was jumping up and down and clapping and yelling out answers and waving their hands and wanting to volunteer."

"It looked like fun, and I wanted to see if I could do it too," he says.

In February 1984, he staged a series of physics demonstrations for the department's public lecture series and hoped to get some takers. By show time, people crowded the back of the lecture hall, spilled into the aisles and were being turned away. The show got rave reviews, and Sprott was pleased with the outcome of his experiment.

Then people started asking when he was going to do it again.

Twenty-six years later, "The Wonders of Physics" is still wowing learners of all ages, filling up to 10 shows each February. Sprott himself has done more than 230 shows for an estimated audience of about 70,000. He also oversees a pared-down traveling version that has taken the show on the road to an additional 1,000-plus audiences in all 72

Wisconsin counties, 30-odd states and three foreign countries.

Sprott changes things up a little each year and uses different themes to help expose people to the many ways they encounter and use physics every day. Though his first show was mainly just to see if he could do it, he's now a firm believer in the value and importance of engaging the public and helping them see the value of science.

“Science - and physics in particular - has a reputation for being difficult, a little bit boring, not relevant. Anything we can do to dispel those views and show that physics can be exciting, a rewarding career, and that it's relevant to the world they live in, will help encourage them [to support it],” he says.

“Society needs science fans,” agrees Shakhashiri. “Science is a wonderful human endeavor carried out by people who have an inclination to do it, but others not only benefit from what scientists do but can also appreciate what they do, even without a deep understanding of chemistry or physics or biology.”

“That’s partly what we’re trying to cultivate with these Wonders of Physics presentations, to develop fans for the scientific enterprise,” Sprott says.

In response to inquiries from across the country, Sprott produced a Wonders of Physics lecture kit for those interested in starting their own outreach programs and has also published a book of Physics Demonstrations suitable for classroom use. Even David Willey, a physics instructor at the University of Pittsburgh at Johnstown who often appears as the “Mad Scientist” on “The Tonight Show with Jay Leno,” credits Sprott as inspiration.

“Many of the demos he's done on the ‘Tonight Show with Jay Leno’ he

got right out of our videos,” Sprott says. “In fact, the ‘Tonight Show’ people would call me up and ask me technical details about how you make these things.”

Given the visibility and wide reach of the Wonders of Physics, it might surprise people to learn that it is actually just a small piece of what Sprott does on campus. After 20 years as part of the department’s large and highly productive plasma physics group, Sprott switched fields 20 years ago to studying chaos theory. He discovered the mathematically simplest system that exhibits chaotic behavior and has written several books and computer software packages on the topic.

Chaos, a branch of nonlinear dynamics, is the idea that small differences in starting conditions can have a disproportionate - and ultimately unpredictable - effect on the outcome. The best-known example is probably the “butterfly effect,” the idea that a butterfly flapping its wings can influence the weather thousands of miles away. Many systems in nature exhibit chaos, including climate, ecology, economics and human behavior.

Like the physics he demonstrates in his shows, Sprott finds that chaos theory relates well to everyday life.

“It can be very empowering,” he says. “As individuals living in a chaotic society, we just have to figure out what small thing we need to do to make it a better world.”

And Sprott himself is an excellent example, as one man leading the charge to bring physics appreciation to tens of thousands.

At 67 years old, Sprott wonders about the show’s future. He hasn’t yet found another faculty member interested in taking it over.

But just as not everything in the world is chaotic, some things in Sprott's life seem certain. We predict another full house for The Wonders of Physics next February.

Provided by University of Wisconsin-Madison

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