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Department News

Dietrich Belitz, Dave Soper, and Steven van Enk have been elected Fellows of the American Physical Society. Belitz was cited for “work on classical and quantum phase transitions,” Soper for “seminal work in Perturbative Quantum Chromodynamics,” and Van Enk for “pioneering contributions in theoretical quantum information and quantum optics.”

David Sokoloff and the Active Learning in Optics & Photonics Team was awarded the 2011 SPIE Educator Award.

Richard Taylor was honored with UO’s Thomas F. Herman Faculty Achievement Award for Distinguished Teaching.

Jim Brau will receive UO’s 2011 Research Innovation Award for fostering basic research and innovation in the physical sciences.

Courtney Klosterman was named a 2011-2012 Goldwater Scholar for her senior year at UO.

Hayden McGuiness won in the 2010 Emil Wolf Outstanding Student Paper Competition.

Ellery Ames was recognized as UO’s top physics teaching assistant for the AAPT Outstanding Teaching Assistant Award.

Message from the Department Head

A recent survey found just 23% of US high school physics teachers have physics degrees. The need for Grade 6-12 physical science teachers is particularly acute in rural areas and school districts with lower socioeconomic demographics. Most K-12 teachers work within 50 miles of where they grew up. Improving physical science education requires we recruit students broadly to universities with strong physics and teacher preparation programs. Some will return home as physical science teachers.

Led by Senior Instructor Dean Livelybrooks, we are developing outreach and education programs to address these issues. Our NSF-funded GK12 program places graduate students into classrooms in rural school districts to help install new curriculum and as role models for students who have never met a practicing scientist, much less thought about becoming one themselves. The UCORE program reaches students in community colleges, and the SOS program provides money for scholarships to students from lower socioeconomic backgrounds. Our new Physics Teaching Track is designed to be a 3+1 or 4+1 program, with the final year spent in the School of Education for a practicum and earning a teaching certification. We are proud of Dean’s efforts in outreach and education and look forward to the first physics teachers from this effort in 2-3 years.

- Steve Kevan

Profile - Steven van Enk

Professor Steven van Enk, who joined our department in 2006, is interested in problems relating to quantum-state entanglement. This is a feature of some states describing two separate systems whose individual quantum states cannot be described independently of the other. Although the concept of entanglement was discussed long ago by Einstein, Podolsky, and Rosen, and also by Schrödinger, it is only recently that it has been recognized as a useful property that can be exploited to create “quantum information technology.” The goal of such technology is to create, store, transmit, and process information in ways not possible using classical-physics-based techniques. These include quantum communication techniques such as teleportation and quantum cryptography. These can be implemented using photons or, more generally, entangled states of light. Although it is not hard, in a sense, to create entangled states (for example, just bounce two electrons off each other), it is generally quite hard to verify by only making measurements that entanglement is present. Discovering experimental methods for verifying...
the presence of entanglement, particularly in the field of quantum optics, is one of Steven’s interests. He approaches this problem as a theorist, and collaborates with experimentalists such as Jeff Kimble’s experimental group at Caltech to test his proposed methods. Using Steven’s ideas, Kimble was recently able to verify entanglement between four light beams that shared one photon between them.

Steven, who was promoted to Full Professor in our department in 2009, was born in Venlo, in the Netherlands. He lived in Holland until 1993 when he began an odyssey that led him to Eugene. He held postdoctoral positions at the Max-Planck Institute for Quantum Optics, Germany, the University of Innsbruck, Austria, and the California Institute of Technology, where he worked with some of the world’s leading theorists in quantum information. He then spent six years as a Member of Technical Staff at Bell Labs, Murray Hill, NJ, before joining the physics department here. He was elected to Fellow of the American Physical Society in 2010. Steven has several hobbies outside of physics. He jokes that he “tries, reluctantly, to avoid playing chess.” He is a Fide Master and places well in the Absolute Correspondence Chess Championship of the USA. He also reports that while at Caltech he was the number one ranked foosball player in the Quantum Optics group.

The audience chose Oxford’s Brian Foster as Champion for his talk on hidden dimensions. He held postdoctoral positions at the Max-Planck Institute for Quantum Optics, Germany, the Netherlands, and the California Institute of Technology, where he worked with some of the world’s leading theorists in quantum information. He then spent six years as a Member of Technical Staff at Bell Labs, Murray Hill, NJ, before joining the physics department here. He was elected to Fellow of the American Physical Society in 2010.

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