

2014 IEEE Photonics Society Quantum Electronics Award Robert W. Boyd, University of Ottawa

The Quantum Electronics Award is given to honor an individual (or group of individuals) for outstanding technical contributions to quantum electronics, either in fundamentals or application or both. The Award may be for a single contribution or for a distinguished series of contributions over a long period of time. No candidate shall have previously received a major IEEE award for the same work.

The 2014 Quantum Electronics Award will be presented to Professor Robert W. Boyd, “for contributions to nonlinear optics, including room temperature slow light and the nonlinear optics of composite materials” The presentation will take place during the Awards Ceremony being held at the 2014 IEEE Photonics Conference, at the Hyatt Regency La Jolla, San Diego, California, USA, on October 13, 2014.



Robert W. Boyd (M'04) was born in Buffalo, New York. He received the B.S. degree in physics from MIT and the Ph.D. degree in physics from the University of California at Berkeley. His Ph.D. thesis was supervised by Charles Townes and involves the use of nonlinear optical techniques in infrared detection for astronomy. Professor Boyd joined the faculty of the University of Rochester in 1977, and in 2001 became the M. Parker Givens Professor of Optics and Professor of Physics. In 2010 he became Professor of Physics and Canada Excellence Research Chair in Quantum Nonlinear Optics at the University of Ottawa. His research interests include studies of “slow” and “fast” light propagation, quantum imaging techniques, nonlinear optical interactions, studies of the nonlinear optical properties of materials, and the development of photonic devices including photonic biosensors. Professor Boyd has written two books, co-edited two anthologies, published over 300 research papers, and been awarded five patents. Prof. Boyd is a fellow of the American Physical Society (APS) and of the Optical Society of America (OSA). He is a past chair of the Division of Laser Science of APS and has been a member of the Board of Directors of OSA. He has also served as an APS representative and chair of the Joint Council on Quantum Electronics (it is joint among APS, OSA and IEEE/LEOS). Prof. Boyd has served as a member of the Board of Editors of Physical Review Letters and of the Board of Reviewing Editors of Science Magazine.

Remarks by Robert Boyd on Receiving the Photonics Society's Quantum Electronics Award

“Thank you very much Dalma, and thanks to the entire leadership of the Photonics Society. I consider it to be a singular honor that I have been selected to receive the 2014 Quantum Electronics Award. I would not be standing here before you today to receive this award if it were not for the help given to me by some very special people over the course of my career. I want especially to thank my thesis supervisor, Charles Townes, for the help he gave me at the beginning of my career. It is commonly believed that Prof. Townes was one of the originators of the term quantum electronics, and it is historical fact that he helped organize the very first IQEC, International Quantum Electronics Conference. I want also to thank my current and former graduate students, who probably taught me as much as I taught them. They now number about 45, and thus regrettably I cannot mention all of them by name. I also wish to thank my wife Diane who is here with me today, and to thank my children for their support throughout my career. I also want to thank my primary professional colleagues: Paul Corkum, Ksenia Dolgaleva, Ebrahim Karimi, Gerd Leuchs, Jeff Lundeen, Peter Milonni, Miles Padgett, and John Sipe.

Let me now make some comments about the discipline of quantum electronics. I consider my principal research area to be quantum electronics, along with photonics and quantum nonlinear optics, which are basically alternative names for the same research area. The beauty of quantum electronics is that it neatly straddles the line between physics and electrical engineering. In doing so, it combines the very best of two distinguished disciplines. In fact, it is my strong personal belief that research in physics and in engineering naturally go hand in hand. One cannot be a good physicist without understanding the engineering aspects and implications of one's work, and one cannot be a good engineer without having a firm understanding of the fundamental physical principles that underlie engineering advances. I have tried to instill this attitude in my own students, and I am happy to see how many of them are today successfully walking the line between physics and engineering.

Thank you for your attention.”

Robert Boyd, October 13, 2014