Christopher Monroe: Biosketch

Christopher Monroe was born and raised outside of Detroit, MI, and graduated from MIT in 1987. He received his PhD in Physics at the University of Colorado, Boulder, studying with Carl Wieman and Eric Cornell. His work paved the way toward the achievement of Bose-Einstein condensation in 1995 and the Nobel Prize in Physics for Wieman and Cornell in 2001. From 1992-2000 he was a postdoc then staff physicist at the National Institute of Standards and Technology (NIST) in the group of David Wineland, leading the team that demonstrated the first quantum logic gate in any physical system. Based on this work, Wineland was awarded the Nobel Prize in Physics in 2012. In 2000, Monroe became Professor of Physics and Electrical Engineering at the University of Michigan, where he pioneered the use of single photons as a quantum conduit between isolated atoms and demonstrated the first atom trap integrated on a semiconductor chip. From 2006-2007 was the Director of the National Science Foundation Ultrafast Optics Center at the University of Michigan.

In 2007 he became the Bice Zorn Professor of Physics at the University of Maryland (UMD) and a Fellow of the Joint Quantum Institute between UMD, NIST, and NSA. He is also a Fellow of the Center for Quantum Information and Computer Science at UMD, NIST, and NSA. His Maryland team was the first to teleport quantum information between matter separated by a large distance; they pioneered the use of ultrafast optical techniques for controlling atomic qubits and for quantum simulations of magnetism; and most recently demonstrated the first programmable and reconfigurable quantum computer.

In 2015, Monroe and Jungsang Kim co-founded IonQ, Inc., a startup company that is fabricating atom-based quantum computer modules with a full software stack and user interface to be accessed via the internet cloud. The company is funded at a level of $22 million primarily through Venture Capital investor groups NEA and GV.

In the last 20 years, Monroe has given over 350 seminars or public lectures and has trained over 100 research scientists, postdoctoral researchers, graduate and undergraduates. He has 160 refereed papers to his name with over 30,000 citations, 5 patents, and his work has been covered repeatedly by media outlets from NPR to the Wall Street Journal. Since 1995, his research has been funded at a level of over $40 million from US Federal Agencies such as DoD, DARPA, IARPA, and NSF. He regularly consults for the US Government, foreign science agencies, and private industry on the topic of quantum science and technology. He sits on the advisory boards of the Institute for Quantum Computing (Canada), the Networked Quantum Information Technologies Hub (United Kingdom), and the Center for Quantum Information (Beijing, China).

Monroe received the Presidential Early Career Award for Scientists and Engineers (1997), the International Award for Quantum Communications (2000), the I.I. Rabi Prize (2001), and the Arthur Schawlow Prize (2015). In 2015, Monroe was named Distinguished Professor at the University of Maryland, and in 2016 he was elected to the National Academy of Sciences.