Malcolm Carroll Extended Bio

Malcolm S. Carroll worked on simulation and measurements of phonon imaging with Prof. J. Wolfe at the University of Illinois as an undergraduate. He completed a Bachelor's degree in Engineering Physics from the University of Illinois. From 1994 to 1995 he was a Fulbright fellow at the Johannes-Guttenberg University of Mainz, Germany, working on Monte-Carlo simulation of spin phase transitions. In 2001 he received a Ph.D. in Electrical Engineering from Princeton University working for Prof. J. C. Sturm. The thesis work was on scaling of silicon nanostructures specifically SiGeC heterojunction bipolar transistors. He joined the semiconductor division of Bell Labs/Lucent Technologies at Murray Hill, NJ, which subsequently became Agere Systems in 2002. Part of this research resulted in a patent defining an approach to integrate germanium detectors with CMOS electronics, which was later used by a start-up company called Noble Peak Vision. He is now a distinguished member of the technical staff at Sandia National Laboratories. His most recent research has centered on materials, device physics and cryogenic circuits for quantum information science (QIS). This includes a world first demonstration of coherent spin manipulation of a MOSFET quantum-dot qubit with a single-donor-atom qubit. He is presently the technical director for silicon quantum computing at Sandia National Laboratories. Dr. Carroll has been a first- or co-author on over 85 peer reviewed articles with an estimated 950 citations. He is also a coauthor of 6 patents. He has mentored 7 graduate students from multiple universities and is an adjunct professor at the University of New Mexico. He is on the international technical committee for the International SiGe Technology and Device Meeting (ISTDM). He is a founder of the International Silicon Quantum Electronics Workshop (http://www.sandia.gov/QIST/workshops.html) & the International Adiabatic Quantum Computing Workshop series (http://www.isi.edu/events/aqc2014/home). He has acted as an international advisor or examiner for the Australian Centre for Quantum Computing and Communication Technologies (CQC2T), the Canadian Foundation for Innovation, Universite de Sherbrooke and the Princeton Center for Complex Materials a NSF-MRSEC.