Robin Daugherty is a PhD candidate at Arizona State University.

He received his Master of Science in electrical engineering at ASU in 2012 and his Bachelor of Science in electrical engineering at ASU in 2010. Robin finished his undergraduate program while pursuing research into control and read-out circuitry for flexible electro-chemical sensors. This project involved analog circuit design for the read-out of the sensors, digital circuit design for the control system, and integration in order to couple these circuits with the flexible electro-chemical sensors.

In his MS program, Robin continued to focus on circuit design with an emphasis on digital circuits. Working under the advice of Dr. David Allee at the ASU Flexible Display Center and Dr. Junseok Chae at the ASU Center for Solid State Electronics Research, Robin focused on his master's thesis work of designing the thin-film transistor (TFT) driving circuitry for an array micro electromechanical systems (MEMS) ultra-sonic transmitters. The transmitters as well as the driving circuitry were all fabricated on the flexible substrate, poly-ethyl-naphthalene (PEN). In addition to designing all of the digital circuits for this project, Robin measured and characterized the components including the MEMS devices, driving circuitry, digital control circuitry, and the integrated MEMS transmitter system.

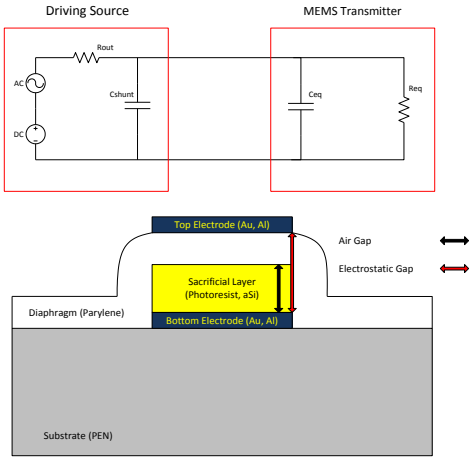
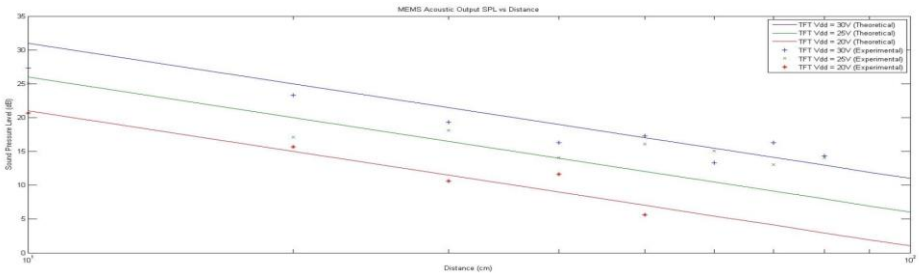


Figure 1: MEMS transducer and TFT driver equivalent circuit (TOP), MEMS transducer simplified structure (MID), and results of acoustic testing results compared with the theoretical values (BOTTOM).



While completing his MS degree, Robin became interested in the field of solid state electronics. Encouraged by the topics presented in Dr. Dragica Vasileska's course, "Semiconductor Device and Process Simulation", **Robin chose to pursue his PhD in solid state electronics, with an emphasis on simulations of micro- and nano-electronic device physics**.

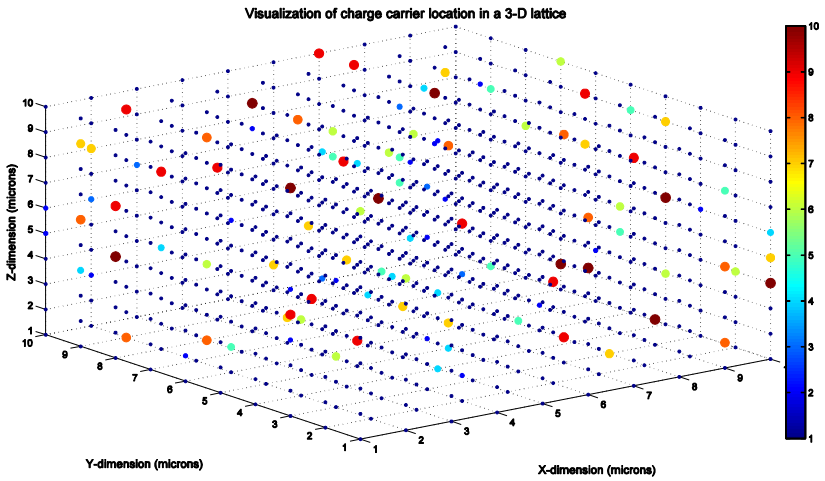


Figure 2: Discretized semi-conductor lattice showing the location of charge carriers (electrons) based on a pseudo-random distribution. This is useful in verifying the operation of a charge assignment scheme in three special dimensions.