**SARAH HAGEN**, University of Illinois at Urbana-Champaign
*Quantum Secret Sharing with Three and Four Qubits*

Quantum replacer codes correct for errors in which the state of one subsystem is replaced, and the location of the error is known. A secret sharing code refers to the special requirement that all possible replacer errors may each be corrected. We build on our previous work deriving general conditions met by any quantum replacer codes to completely characterize quantum secret sharing codes for three and four qubits. Additionally, we introduce helper codes as a relaxation of the conditions of a general secret sharing code. Instead of being able to correct errors in all locations, only some errors may be corrected with use of a non-erasable party referred to as the helper. This inequality between qubits of a code can be experimentally motivated.