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Jamie Pommersheim* (jamie@reed.edu), 3203 SE Woodstock Blvd, Department of Mathematics, Reed College, Portland, OR 97202. *Quantum learning from symmetric oracles.*

Many of the existing algorithms in quantum computation can be fit into the framework of oracle problems, also known as concept learning problems. In this setup, an unknown oracle, represented by a unitary transformation, is chosen from known finite set of oracles. Using queries to this oracle, the learner wishes to determine which oracle was chosen, or at least some information about the chosen oracle. If the problem is symmetric, for example, if the oracles in question form a group, then much can be said about the optimal quantum queries that the learner should make. In this talk, we examine such oracle problems. (Received September 25, 2017)