

# The Complementarity Polytope, Pauli operators, and the Clifford Group

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## Abstract

The Pauli operators are a subset of  $d \times d$  unitary matrices that play a significant role in quantum information theory, and the Clifford group is the unitary normalizer of these operators. While the algebraic properties of the Clifford group are very well understood, I am interested in analyzing this group from a slightly more combinatorial perspective. One possible avenue to do this is via what is known as the Complementarity Polytope. This talk will discuss what the complementarity polytope is, how we may obtain one whose vertices correspond to eigenvectors of Pauli operators (in certain dimensions), and how we may use this to characterize the corresponding Clifford group.

**Keywords:** Polytope, unitary matrix, quantum information.