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Applications of classifying spaces in quantum computation

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In quantum computation an important class of observables are the Pauli observables. Commutativity properties of these observables determine fundamental features of quantum systems such as contextuality. Adem, Cohen, and Torres-Giese introduced a classifying space for principal bundles whose transition functions commute when simultaneously defined. I will talk about topological properties of these classifying spaces and applications to study contextuality in quantum computation.