Mathematics and CS Seminar

Pauli stabilizer codes

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Pauli stabilizer code is a system of qubits (or 'qudits') whose ground state vectors are characterized by invariance under the action of an abelian subgroup of a discrete Heisenberg group. Pauli stabilizer codes have been considered by theorists as potential tools in achieving fault tolerance in quantum computation. It was observed that such systems of locally interacting qudits arranged on a lattice may exhibit surprising properties, e.g. ground state degeneracy depending on the topology or existence of excitations created at ends of line operators which can not be created locally. After describing basic examples, I will outline the theory of translation invariant Pauli stabilizer codes based on commutative algebra.

Thursday, January 26, 2023 04:15pm - 05:15pm
Mondi 2, I01.01.008, Central Building

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