

Quantum Topology Seminar

Searching for a Quantum Algorithm for Khovanov Homology

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Abstract: This talk will discuss our search for a quantum algorithm for Khovanov Homology. The project began a long time ago with the speaker and more recently with Nadia Shirakova and Sam Lomonaco. It remains in an unfinished state. The problem is how could a quantum black box efficiently produce the chain complex for Khovanov homology from the combinatorial input data of a knot or quantum knot? Once we have such data, it is possible to apply combinatorial Hodge Theory and the phase estimation methods of Lloyd and Zanardi to compute ranks of homology groups. But how can a quantum black box know the chain complex?

Thursday, February 25 at 12:00 PM in Zoom