

Title: Fault-tolerant gates via homological product codes

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Abstract: <p>I will present a method for the implementation of a universal set of fault-tolerant logical gates using homological product codes. In particular, I will show how one can fault-tolerantly map between different encoded representations of a given logical state, enabling the application of different classes of transversal gates belonging to the underlying quantum codes. This allows for the circumvention of no-go results pertaining to universal sets of transversal gates and provides a general scheme for fault-tolerant computation while keeping the stabilizer generators of the code sparse.</p>

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