DAVID KRIBS, University of Guelph

Quantum error correction on infinite dimensional Hilbert spaces

I will discuss a recent generalization of the quantum error correction framework to infinite-dimensional Hilbert spaces. The generalization yields new classes of quantum error correcting codes that have no finite-dimensional counterparts. The theory begins with a shift of focus from states to algebras of observables. Standard subspace codes and subsystem codes are seen as the special case of algebras of observables given by finite-dimensional von Neumann factors of type I. The generalization allows for the correction of codes characterized by any von Neumann algebra.

This talk is based on joint work with Cedric Beny and Achim Kempf, found in the paper in J. Math. Phys. **50**(2009), 062108.