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MATHEMATICS COLLOQUIUM SERIES
UNIVERSITY OF CENTRAL FLORIDA

Dr. David Kribs
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Will speak on

**"Quantum error correction on
infinite-dimensional Hilbert spaces"**

Abstract:

A common challenge in the numerous fields of quantum information science is to devise techniques that protect the evolution of quantum systems from external noise. The field of quantum error correction has developed over the past decade as a response to this challenge. I'll begin this talk with a short introduction to the basic concepts of quantum error correction, initially focusing on the standard finite-dimensional case with a finite number of qubits. Then I'll discuss recent work that generalizes the theory of quantum error correction to the case of infinite-dimensional Hilbert spaces. We'll see that, under relatively mild conditions, much of the structure known from systems in finite-dimensional Hilbert spaces carries over to infinite dimensions. But apparently this is not the end of the story. For instance, we now have the intriguing possibility that arbitrary von Neumann algebras can define quantum codes. I'll discuss as much of the infinite-dimensional aspects as time will permit.

This talk is based on joint work with Cedric Beny and Achim Kempf.

Date: Thursday, March 5, 2009

Time: 1:30 PM

Place: MAP 233

Everyone is cordially requested to attend.