Lyudmyla Turowska

Title:

Absolutely dilatable module maps

Abstract

I will discuss the notion of absolute dilation for maps on von Neumann algebras, focusing primarily on maps on $B(H)$ with an additional modularity condition. The notion was recently defined and studied by C. Duquet and C. Le Merdy. They characterized dilatable Schur multipliers. We extend the results by replacing the requirement of being Schur by being modular over arbitrary von Neumann algebra, instead of maximal abelian selfadjoint algebra. Such maps are characterized by the existence of a tracial von Neumann algebra (N, τ), called an ancilla, and a certain unitary operator. Different types of ancillas (abelian, finite-dimensional, etc.) lead to the definition of local, quantum, approximate quantum, and quantum commuting dilatable maps, and I will discuss the relationships between these types. The motivation to study different types of dilations comes from Quantum Information Theory. The interrelation between QIT and dilatable maps will be explained.

The talk is based on a joint work with A. Chatzinikolaou and I. G. Todorov.