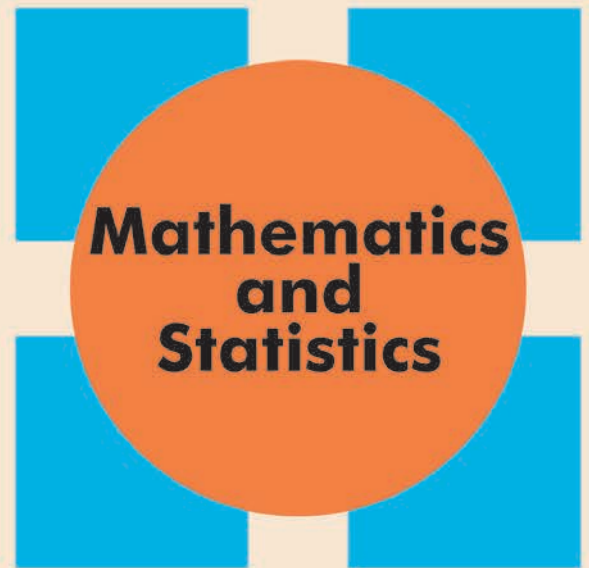


COLLOQUIUM

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Multiplicative Properties of Quantum Channels



Tuesday, October 10, 2017; 3:00 - 4:00 PM; Math Lounge, CW
307.20.

Abstract: In this talk I will present a recently undertaken study on multiplicative behaviour of trace preserving and completely positive maps acting on matrix algebras. Such maps are called quantum channels in information theory. It will be proved that any arbitrary unital quantum channel, when restricted to a specific domain, behaves as an automorphism. This domain captures certain spectral properties of the channel and is also useful in determining the asymptotic behaviour of the given channel. The concept of 'multiplicative index' of a channel will be introduced and some examples will be given to compute this index. I will then discuss some questions that arise from this study which opens up new possibilities for future research. I will also mention some applications in quantum error correction.