

MAFIA seminář

An introduction to noncommutative Markov semigroups

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Abstrakt: In recent years there have been much interests in the irreversible dynamics of quantum systems described in the Markovian approximation by the so-called quantum dynamical semigroups. Motivation to study such objects is twofold. Firstly, there are interesting mathematical problems like, for example coercive inequalities or ergodic properties, and, secondly, possible applications to physical processes among which decoherence and dissipation are the most know ones. In this talk I present basic facts concerning noncommutative Markov semigroups and their generators, and discuss applications in quantum optics.

Plan of the talk:

Part I

1. Operator algebras as algebraic framework for quantum systems.
2. From classical to quantum Markov semigroups.
3. Generators of noncommutative Markov semigroups.
4. Simple examples.

Part II

1. Applications.
2. Conclusions .