NITheP
National Institute for Theoretical Physics

NITheP Colloquium
Monday, 29 March 2021, 16h00

Prof Dariusz Chruscinski | Nicolaus Copernicus University, Torun, Poland

"On the universal constraints for relaxation rates for quantum dynamical semigroup"

I propose a conjecture for the universal constraints for relaxation rates of a quantum dynamical semigroup. It is shown that it holds for several interesting classes of semigroups, e.g. unital semigroups and semigroups derived in the weak coupling limit from the proper microscopic model. Moreover, proposed conjecture is supported by numerical analysis. It makes an essential step towards physical characterisation of complete positivity. This conjecture would have several important implications: it allows to provide universal constraints for spectra of quantum channels and provides a necessary condition to decide whether a given channel is consistent with Markovian evolution.

BIOGRAPHY

Professor Dariusz Chruscinski is the Head of the Department of Mathematical Physics at the Nicolaus Copernicus University. PhD in theoretical physics (1993). Scientific interests: mathematical physics, open quantum systems, entanglement theory, operator algebras. Author (with A. Jamiolkowski) of "Geometric Phases in Classical and Quantum Mechanics" Birkhauser (2004). Editor of Reports on Mathematical Physics and Editor in Chief of Open System & Information Dynamics. Organizer of international Symposium on Mathematical Physics.

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