Stochastic Coherence Theory for Qubits

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Time: 3:00pm to 4:00pm
Venue: Hilbert Space (SPMS-PAP-02-02)
Host: Asst Prof Tomasz Paterek

Abstract
The resource theory of coherence studies the operational value of superpositions in quantum technologies. A key question in this theory concerns the efficiency of manipulation and interconversion of this resource. We solve this question completely for mixed states of qubits by determining the optimal probabilities for mixed state conversions via stochastic incoherent operations. This implies new lower bounds on the asymptotic state conversion rate between mixed single-qubit states which in some cases is proven to be tight. Furthermore, we obtain the minimal distillable coherence for given coherence cost among all single-qubit states, which sheds new light on the irreversibility of coherence theory.

Short Biography
Alexander Streltsov obtained his PhD in 2013 at the University of Düsseldorf (Germany), working on general quantum correlations beyond entanglement. His PhD thesis was awarded with prizes for the best dissertation by the German Physical Society and the University of Düsseldorf. After his PhD he was postdoc at ICFO (Barcelona, Spain) and Freie Universität Berlin, both supported by the Alexander von Humboldt Foundation. Since 2017 he is Marie Curie fellow at Gdańsk University of Technology (Poland).