Mathematical Picture Language Seminar

Tuesday, November 1

9:30 a.m. Boston time

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Quantum Entropy Inequalities and Reversible Quantum Markov Semigroups as Gradient Flow for Quantum Relative Entropy

Abstract: As a consequence of the Data Processing Inequality, for any quantum Markov semigroup (QMS), the relative entropy of a state evolving under the action of the semigroup with respect to an invariant state is monotone decreasing in time. When can the semigroup be viewed as gradient flow with respect to some metric and the relative entropy? This is not always the case; a certain reversibility condition is required. Under a slightly stronger reversibility condition, it is possible to give an explicit construction of the metric and it turns out that this gradient flow framework provides a good starting point for the proof of new entropy-entropy dissipation inequalities for such QMS. A key role in this is played by another entropy inequality, this time concerning a certain "monotone metric.' Many people have contributed to this subject and, while other approaches will be discussed, the focus will be on results obtained together with Jan Maas.

Zoom QR Code & Link:
https://harvard.zoom.us/j/779283357?pwd=MitXVm1pYUlJVzZqT3lwV2pCT1ZUQT09

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