

HARVARD UNIVERSITY
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**Tuesday, September 8, 2020, at 10:00 (Boston)
15:00 (UK/Eire) 16:00 (C.Europe) 22:00 (China)**

Mathematical Picture Language Seminar

Zoom at: <https://harvard.zoom.us/j/779283357>

Discriminating between unitary quantum processes

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Abstract: Discriminating between unknown objects in a given set is a fundamental task in experimental science. In this talk we consider the task of discriminating between quantum processes. In particular, we discriminate between a pair of unitary operators acting on a quantum system whose underlying Hilbert space is possibly infinite-dimensional. We prove that in contrast to state discrimination, one needs only a finite number of copies and no entanglement to discriminate perfectly between the two unitaries. Moreover, we employ our results to study a novel type of quantum speed limits which apply to pairs of quantum evolutions. This work was done jointly with Simon Becker (Cambridge), Ludovico Lami (Ulm) and Cambyse Rouze (Munich).

