Nonunitary operators in quantum information and distributed quantum computing

Monday 9 June 2025 14:15 (30 minutes)

In this talk, we will consider quantum-information-theoretic settings in which nonunitary operators arise naturally, including 2-dimensional extensions of the ZX-calculus. We apply this perspective to scenarios in distributed quantum computing and quantum networking where the actualization of asynchronous, low-latency quantum communication protocols necessitates nonunitary gates for correct behaviour. The talk draws upon several separate joint projects with, respectively, M. Azam (arXiv:2210.03556); J. Bell and F. Butler (in preparation); and J. Peckham and D. Makharoff (arXiv:2407.14987). Nonetheless, there is a continuous narrative across these works.

Keyword-1

Nonunitary operator

Keyword-2

Distributed quantum computing

Keyword-3

Quantum networking

Author: RAYAN, Steven (quanTA Centre / University of Saskatchewan)

Presenter: RAYAN, Steven (quanTA Centre / University of Saskatchewan)

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