

DALHOUSIE MATHEMATICS COLLOQUIUM

Thursday April 11 2019, 2:30 pm, Chase 319

Speaker: David Gosset
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Quantum advantage with shallow and noisy circuits

The depth of a computation is a measure of the total time required to perform the computation when elementary operations may be applied in parallel. It has been expected since pioneering work of Terhal and Divincenzo that quantum circuits of *constant* depth may be capable of certain tasks that are beyond the reach of efficient classical computation. In this talk I will describe a recent proof of a more modest separation: between constant-depth quantum circuits and constant-depth classical circuits. I will also touch upon new developments including a generalization to shallow quantum circuits with noise. This talk is based on joint works with Sergey Bravyi, Robert Koenig, and Marco Tomamichel.