Physics Colloquium

Thursday, 27 February 2025 | 17:00 – 18:00, Seminar Room 3rd Floor

Space-time duality approach to quantum many-body dynamics

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ABSTRACT

In recent years a class of models in discrete space-time known as quantum circuits have emerged as a useful arena to understand generic quantum many-body dynamics, and as concrete platforms for quantum simulation. The most appealing feature of these systems is that, contrary to generic many-body systems in continuous time, the dynamics of quantum circuits are sometimes amenable to analytical treatment. In the talk I will present a fruitful route to achieve this goal based on imposing a symmetry between space and time. I will review how this symmetry allows to fully characterise spreading of quantum information. I will then show that this symmetry, and the constraints it imposes, can be systematically relaxed while retaining exact solvability.