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Continuous quantum variables: from quantum computing to relativistic quantum information

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Quantum information has traditionally employed *qubits* (quantum bits) to encode and process quantum information because of their obvious analogy to (classical) bits and the fact that digitisation allows for errors to be corrected, even at the quantum level. Nevertheless, *continuous quantum variables* afford distinct advantages in terms of producing extremely large-scale resource states (cluster states with over 1 million entangled modes) for quantum computing while using only minimal experimental equipment. In addition, this approach offers new tools for nonpertubative analysis of the behaviour of quantised detectors interacting with a relativistic quantum field. I will provide an overview of the latest theoretical and experimental advances at the forefront of continuous-variable quantum theory and technology for use in quantum computing and relativistic quantum information.

Topic:

Mini-workshop: Continuous Variables and Relativistic Quantum Information

Summary

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Session Classification: Workshop on continuous variables and quantum information

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