

Termodinámica }
 Información } Cuántica

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 Física de la Materia

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Temas de investigación

- Información cuántica
 - Teoría del entrelazamiento
 - Inteligencia artificial en ordenadores cuánticos
- Termodinámica cuántica
 - Procesos de transporte
 - Teoría de fluctuaciones

Teoría del entrelazamiento

Quantum 'spookiness' passes toughest test yet

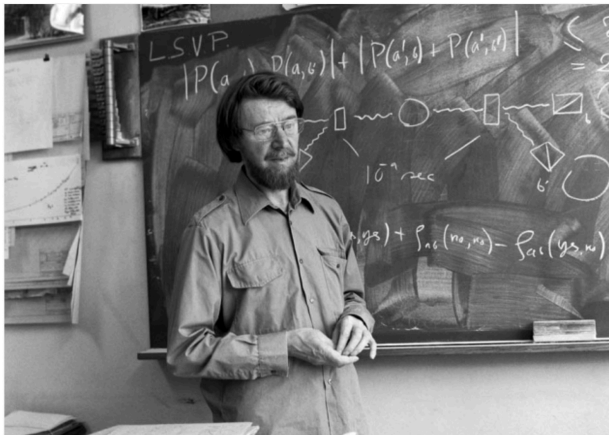
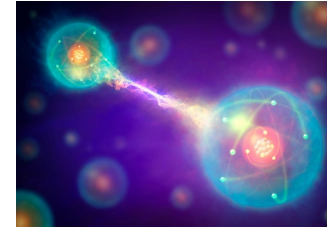
Experiment plugs loopholes in previous demonstrations of 'action at a distance', against Einstein's objections — and could make data encryption safer.

[Zeeya Merali](#)

27 August 2015



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THE FRONTIERS OF PHYSICS

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Separability criteria and entanglement measures for pure states of N identical fermions

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IOP PUBLISHING

JOURNAL OF PHYSICS A: MATHEMATICAL AND THEORETICAL

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[doi:10.1088/1751-8113/43/27/275301](https://doi.org/10.1088/1751-8113/43/27/275301)

Quantum entanglement in two-electron atomic models

Inteligencia artificial en ordenadores cuánticos

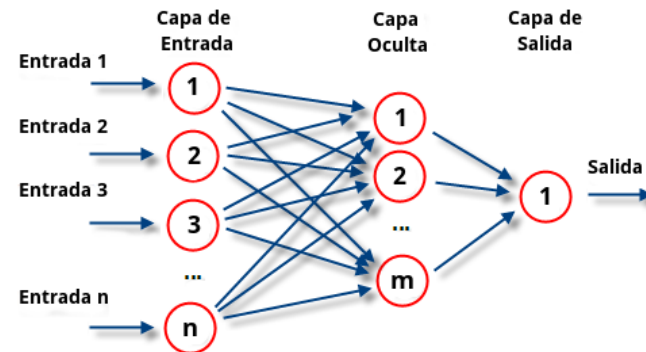
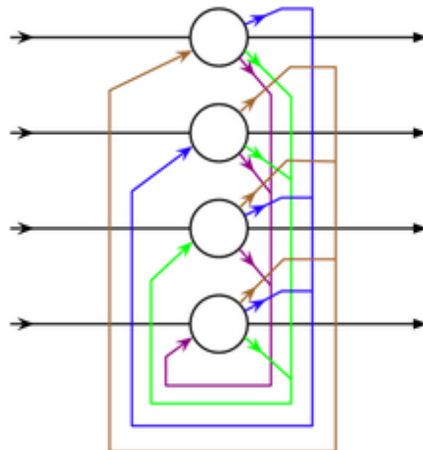
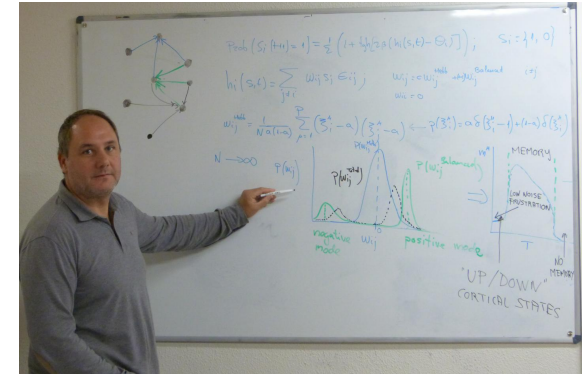
REVIEW

doi:10.1038/nature23474

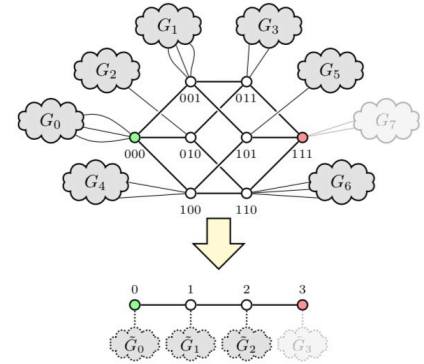
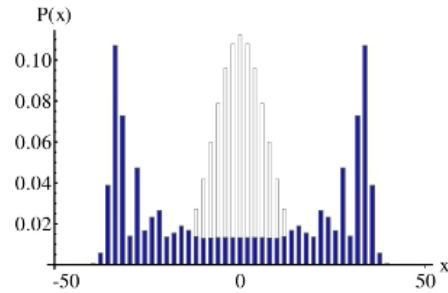
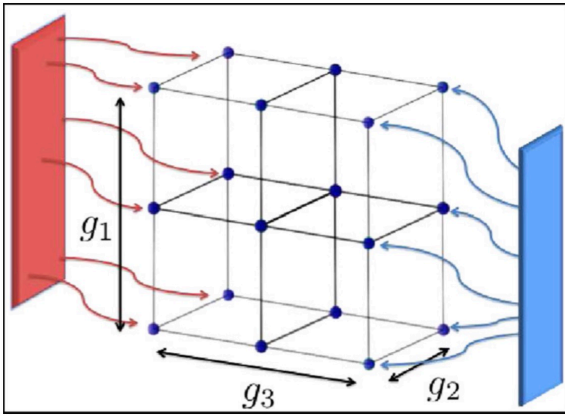
Quantum machine learning

Jacob Biamonte^{1,2}, Peter Wittek³, Nicola Pancotti⁴, Patrick Rebentrost⁵, Nathan Wiebe⁶ & Seth Lloyd⁷

Fueled by increasing computer power and algorithmic advances, machine learning techniques have become powerful tools for finding patterns in data. Quantum systems produce atypical patterns that classical systems are thought not to produce efficiently, so it is reasonable to postulate that quantum computers may outperform classical computers on machine learning tasks. The field of quantum machine learning explores how to devise and implement quantum software that could enable machine learning that is faster than that of classical computers. Recent work has produced quantum algorithms that could act as the building blocks of machine learning programs, but the hardware and software challenges are still considerable.



Transporte Cuántico



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PAPER

Quantum transport in d -dimensional lattices

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Keywords: quantum transport, fermion, boson, spin, lattice, current, Lindblad

Quantum walks on embedded hypercubes

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Teoría de Fluctuaciones y Simetrías

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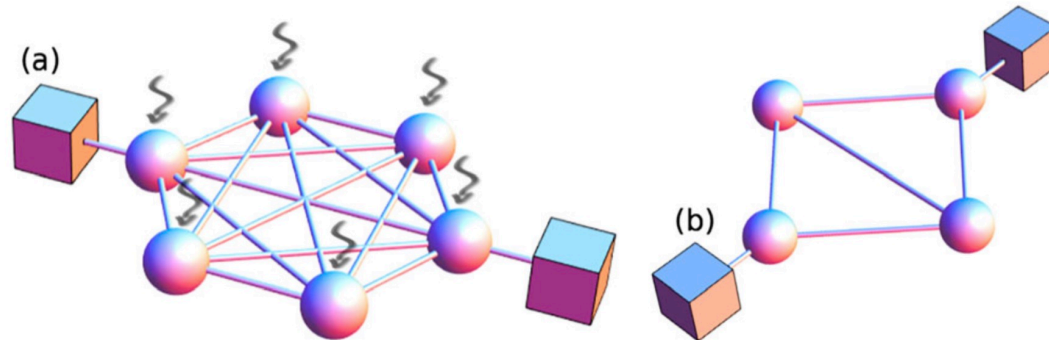


Harnessing symmetry to control quantum transport

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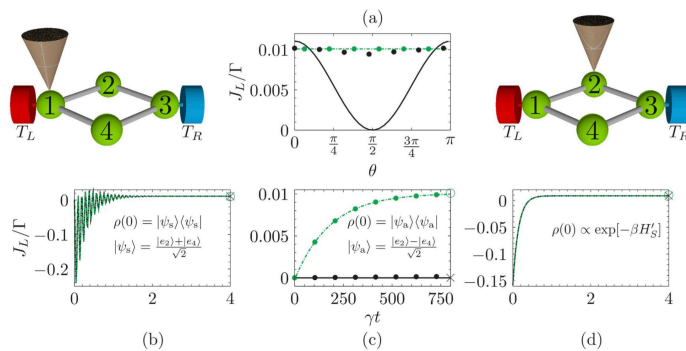


Teoría de Fluctuaciones y Simetrías

SCIENTIFIC REPORTS

OPEN Dynamical signatures of molecular symmetries in nonequilibrium quantum transport

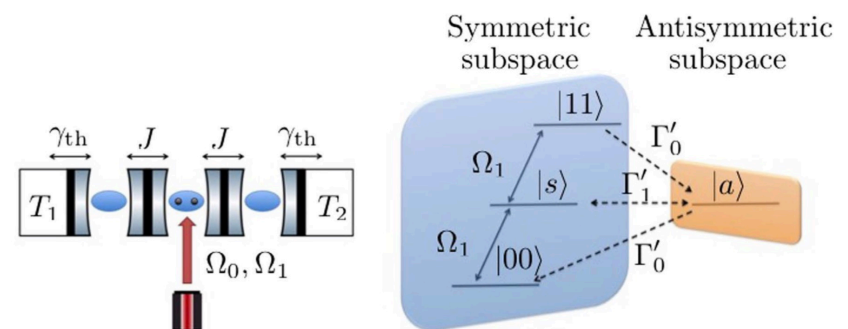
Received: 20 April 2016
Accepted: 19 May 2016
Juzar Thingna^{1,2}, Daniel Manzano^{1,3,4} & Jianshu Cao^{1,2}



SCIENTIFIC REPORTS

OPEN An atomic symmetry-controlled thermal switch

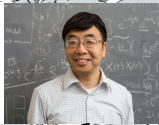
Daniel Manzano^{1,2,3} & Elica Kyoseva¹



Herramientas

- Sistemas Cuánticos abiertos (Ecuación Maestra y Quantum MonteCarlo).
- Simulación (C/C++/Python/Matlab) en el cluster Proteus.
- Modelización y análisis teórico.

Colaboraciones Internacionales



Más información:

- <https://ic1.ugr.es/manzano/>
- manzano@onsager.ugr.es
- <http://ergodic.ugr.es>