



rede galega de computacion de altas prestacions

Conferencia

Prof. Roger G. Melko U Waterloo, Canadá "Tangling with Entanglement: Area Laws in Condensed Matter Physics"



Mércores 7 de Outubro, 11 horas, Centro de Supercomputación de Galicia

Entanglement is perhaps the quintessential feature of quantum mechanics that distinguishes it from classical physics. The concept is familiar to the fields of quantum information science and quantum computing, but also increasingly playing a role in other subfields of physics. For example, it is now generally believed that most conventional quantum groundstates of condensed matter systems have entanglement properties that obey an "area law" - scaling as the boundary between entangled regions, something first discussed in the context of black hole event horizons. I will discuss the area law from a condensed matter theory perspective, including what deviations from it tell us about exotic phases and quantum critical points. The adherence of a quantum many-particle wavefunction to the area law is also known to be closely related to the ability to simulate it using classical computers - a new understanding that has lead to significant progress in addressing old problems related to hi-Tc superconductivity and frustrated magnetism.