Olalla Castro-Alvaredo

Title: “On the Entanglement Entropy of Integrable Quantum Field Theories”

Abstract:
Since 2007 various collaborators and I have worked on the development of a programme which uses low dimensional quantum field theory (QFT) methods for the computation of the von Neumann and Renyi entanglement entropy (EE) of 1+1 dimensional QFTs. Although some of our main results hold for all 1+1 dimensional QFTs we have found that the powerful computational tools available to us when the QFT is also integrable are very useful in reaching a deeper understanding of the fundamental properties of the EE. They have also allowed us to gain new understanding of the properties of the ground state of many well-known models such as the sinh-Gordon, sine-Gordon and Ising field theories.In this talk I will review our main results during this period with focus on recent progress concerning the comparison of some QFT predictions and lattice simulations in the off-critical regime.