Entanglement Spectrum in The Fractional Quantum Hall Effect

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Abstract

The study of the Fractional Quantum Hall Effect (FQHE) discovered in 1982 by Tsui, Strmer and Gossard [6] has been enlightening in various fields of Physics. Particullarily, in the past two decades this effect has been of major interest for the study of highly correlated systems entanglement. During this short communication I will present the concept of *Entanglement Spectrum* and its application to the FQHE [3]. In particular, I will present numerical results for Laughlin states in three different geometries and different Hilbert space partitions [3, 4, 5]. A particular emphasis will be given in the interpretation of the entanglement spectra as a clear sign of the so-called *Topological Order*[1]. In order to do this, the entanglement spectra will be used as numerical evidence of Haldane and Li's conjecture: The low-lying entanglement spectrum corresponds to the energy spectrum of the theory's edge modes described by a particular CFT [3, 4, 5].

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