The Hebrew University of Jerusalem , Condensed-Matter Physics Seminar

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"Detecting Non-Abelian Anyons by Charging Spectroscopy"

Observation of non-Abelian statistics for the charge e/4 quasiparticles in the v=5/2 fractional quantum Hall state remains an outstanding experimental problem. The non-Abelian statistics are linked to the presence of additional low energy states in a system with localised quasiparticles, and hence an additional low-temperature entropy. Recent experiments, which detect changes in the number of quasiparticles trapped in a local potential well as a function of an applied gate voltage, provide a possibility for measuring this entropy, if carried out over a suitable range of temperatures. We present a microscopic model for quasiparticles in a potential well and study the effects of non-Abelian statistics on the charge stability diagram in the gate voltage-temperature plane. We predict an even-odd effect in the diagram, which is a signature of non-Abelian statistics.

Other relevant proposals will be reviewed.