

Electronic Mach-Zehnder interferometer as a tool to probe fractional statistics

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Measurements of the transmission phase through a quantum dot (QD) have been first reported by the Weizmann group in 1996, and consequently stirred much theoretical and experimental interest. There have been several intriguing features in the experimental data, arguably the most interesting is the recurrence of a phase lapse of π between two consecutive Coulomb resonances. New experimental results by the Weizmann group [1] show a clear cross-over from a mesoscopic pattern of the transmission phase (few electron QD) to the correlated phase-lapse regime (larger number of electrons in the QD). Recent theoretical results [2] indicate that for asymmetric dot-lead couplings the interaction renormalized couplings lead to significant enhancement of phase-lapse occurrence as compared with non-interacting QDs.

REFERENCES

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2. D. Golosov and Y. Gefen, to be published