



Quantum Physics

Localization of M-Particle Quantum Walks

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We study the motion of M particles performing a quantum walk on the line. Under various conditions on the initial coin states for quantum walkers controlled by the Hadamard operator, we give theoretical criterion to observe the quantum walkers at an initial location with high probability.

Comments: To the authors knowledge, this paper appears to be the first to study the localization problem for a general M-Particle quantum walk. Will submit for publication

Subjects: **Quantum Physics (quant-ph)**; Mathematical Physics (math-ph)

MSC classes: 81T25

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