

Quantum Physics

Absorption Probabilities for the Two-Barrier Quantum Walk

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Let $p_j^{(n)}$ be the probability that a Hadamard quantum walk, started at site j on the integer lattice $\{0, \dots, n\}$, is absorbed at 0. We give an explicit formula for $p_j^{(n)}$. Our formula proves a conjecture of John Watrous, concerning an empirically observed linear fractional recurrence relation for the numbers $p_1^{(n)}$.

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