Solution statement

This experiment successfully designed a quantum random walk with excellent symmetry, and it proves that the H gate, which can produce an average superposition state, cannot be designed as a quantum dice, because after dice multiple times, quantum coherence will be generated due to the phase problem, which will affect the walking result.

It successfully designed two-dimensional quantum random walking, also known as spherical quantum random walking, and got the same trend as one-dimensional walking. ​The quantum walk is spreading to both sides, and the classical walk is a bell-shaped distribution.

When the target is closer to the center value, you can use the quantum walk search method to have a greater possibility of finding the target. On the contrary, use the classical method, which can find the center target better because of its bell-shaped distribution characteristics. Finally, ​the current quantum computer has a large error value and still cannot handle multi-bit quantum algorithms.

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