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Bipartite walks are better than Grover's walk

We introduce a new discrete quantum walk model, known as bipartite walks. We show that Grover's walk is a special case of bipartite walks. Using the connections between the spectrum of a graph G and the spectrum of the subdivision graph of G , we show that when G is a regular bipartite graph, one step of bipartite walk defined over G is two steps of Grover's walk defined over G .