

Abstract Submitted
for the DAMOP18 Meeting of
The American Physical Society

Using quantum mechanics to find your way through a maze¹
MARK HILLERY, DANIEL KOCH, CUNY-Hunter Coll — A quantum walk is a quantum version of a classical random walk. It can take place on a line or on a more complicated graph. Quantum walks can be used to find a distinguished vertex of a graph or anomalous structural elements, such as an extra edge or loop, with a quantum speedup. In recent work we have shown they can also find paths. We discuss two kinds of graphs, linked stars and trees, and show that a quantum walk can find a path between a vertex labeled START and one labeled FINISH with a quantum speedup.

¹Research supported by the John Templeton Foundation

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Date submitted: 12 Jan 2018

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