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Non-reversal Open Quantum Walks

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A model of non-reversal quantum walk is introduced. In such a walk, the walker cannot go back to previously visited sites but it can stay on the same site or move to a new site. The process is introduced on a line using the formalism of Open Quantum Walks (OQWs). Afterwards, the non-reversal OQW is demonstrated in 2D. The “quantum coin” used consists of Kraus operators, each representing one direction. Examples of some trajectories and distributions are given. An interesting relationship is formulated between the radius of the spread and the number of steps of the walk. The results are compared with the ordinary OQW and the classical Self-Avoiding Walk.

Apply to be
 considered for a student
   award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
   PhD, N/A)?

PhD

Main supervisor (name and email)
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Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

Yes

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