

Abstract Submitted  
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**Controlled quantum transport in a disordered one-dimensional lattice** SAHEL ASHHAB, Qatar Environment and Energy Research Institute, Hamad Bin Khalifa University, Qatar Foundation, Doha, Qatar — We investigate the effect of disorder on the transfer of quantum states across a one-dimensional lattice with varying levels of control resources. We find that the application of properly designed control signals, even when applied only to the two ends of the lattice, allows perfect state transfer up to disorder strengths that would not allow a generic quantum state to propagate the length of the lattice. At sufficiently large disorder strengths, however, the local control signals fail to send the quantum state from one end of the system to the other end. Our results shed light on the interplay between disorder and controlled transport in one-dimensional systems.

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