Characterization of the propagation of local observables under matchgate evolution[1] ADRIAN CHAPMAN, AKIMASA MIYAKE, University of New Mexico — We present a classically efficient algorithm to exactly propagate the support of a local observable under Heisenberg evolution by a nearest-neighbor matchgate circuit. Support propagation is quantified by the Lieb-Robinson commutator norm, whose time evolution admits an efficient classical simulation by our algorithm. This is surprising in light of the fact that the Heisenberg evolution of the local observable itself cannot even be stored efficiently by a classical computer in the worst case. We apply our result to the study of propagation through a spin chain in the presence of locally fluctuating disorder and examine several interesting features of our numerical results.

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