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Houssam Abdul-Rahman* (houssam@uab.edu), Department of Mathematics, 1300 University Blvd. Campbell Hall room 452, Birmingham, AL 35294-1170, and **Günter Stolz** (stolz@math.uab.edu), Department of Mathematics, 1300 University Blvd. Campbell Hall room 452, Birmingham, AL 35294-1170. *An area law for entanglements of eigen states in a disordered XY chain.*

We will consider an XY spin chain with a random magnetic field. We will use Wick's rule and results from the Anderson localization to show how the dynamical localization of the resultant effective one particle Hamiltonian implies an area law for the bipartite entanglement entropy of the eigen states. Moreover, we will introduce the Local Jordan-Wigner fermionic operators to prove the result with respect to any connected subinterval of the chain. (Received January 17, 2015)