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Yan Dai* (ydai@math.arizona.edu). *The Exit Distribution for Smart Kinetic Walk with Symmetric and Asymmetric Transition Probability.*

It has been proved that the distribution of the point where the Smart Kinetic Walk (SKW) exits a domain converges in distribution to harmonic measure on the hexagonal lattice. For other lattices, it is believed that this result still holds, and there is good numerical evidence to support this conjecture. Here we examine the effect of the symmetry and asymmetry of the transition probability on each step of the SKW on the square lattice and test if the exit distribution converges in distribution to harmonic measure as well. From our simulations, the limiting exit distribution of the SKW with a non-uniform but symmetric transition probability as the lattice spacing goes to zero is the harmonic measure. This result does not hold for asymmetric transition probability. We are also interested in the difference between the SKW with symmetric transition probability exit distribution and harmonic measure. Our simulations provide strong support for a explicit conjecture about this first order difference. The explicit formula for the conjecture will be given below. (Received July 28, 2017)