1135-60-1635 **Yuval Peres*** (peres@microsoft.com), Microsoft Research, 1 Microsoft Way, Redmond, WA 98052. *Cutoff for a stratified random walk on the hypercube, related to a mysterious random walk on invertible matrices modulo 2.*

Consider the Markov chain on the nonzero vectors in the hypercube, which moves by picking an ordered pair (i, j) of distinct coordinates uniformly at random and adding the bit at location i to the bit at location j, modulo 2. In joint work with Anna Ben Hamou, we showed that this Markov chain has cutoff at time $(3/2)n \log n$ with window of order n, solving a question posed by Chung and Graham (1997). The chain records the evolution of a single column in the following random walk on the group of invertible $n \times n$ matrices over $\mathbb{F}_2$: pick an ordered pair (i, j) of distinct rows uniformly at random and add row i to row j, modulo 2. The order of the mixing time for this matrix walk is unknown, but lies between $n^2/(\log n)$ and n^3. As suggested by Ron Rivest (motivated by applications in cryptography), if we restrict attention to polynomially-computable distinguishing statistics, the resulting modified mixing time for the matrix walk might be much smaller. (Received September 23, 2017)