1035-60-803 **Alexander E Holroyd*** (holroyd@math.ubc.ca), 121-1984 Mathematics Road, Vancouver, BC V6T 1Z2, Canada, and **Omer Angel**, **Dan Romik** and **Balint Virag**. *Random Sorting Networks.*

See http://www.math.ubc.ca/ holroyd/sort for pictures.

Sorting a list of items is perhaps the most celebrated problem in computer science. If one must do this by swapping neighboring pairs, the worst initial condition is when the n items are in reverse order, in which case n choose 2 swaps are needed. A sorting network is any sequence of n choose 2 swaps which achieves this.

We investigate the behavior of a uniformly random n-item sorting network as n -> infinity. We prove a law of large numbers for the space-time process of swaps. Exact simulations and heuristic arguments have led to astonishing conjectures. For example, the half-time permutation matrix appears to be circularly symmetric, while the trajectories of individual items appear to converge to a famous family of smooth curves. We prove the more modest results that, asymptotically, the support of the matrix lies within a certain octagon, while the trajectories are Holder-1/2. A key tool is a connection with Young tableaux. (Received September 16, 2007)