1112-05-441 **Michael Schroeder** and **Rebecca Smith*** (`rnsmith@brockport.edu`). *Sorting with two stacks in series.* Preliminary report.

Knuth showed that a permutation π can be sorted by a stack (meaning that by applying push and pop operations to the sequence of entries $\pi(1), \ldots, \pi(n)$ we can output the sequence $1, \ldots, n$) if and only if π avoids the permutation 231, i.e., if and only if there do not exist three indices $1 \leq i_1 < i_2 < i_3 \leq n$ such that $\pi(i_1), \pi(i_2), \pi(i_3)$ are in the same relative order as 231.

Atkinson, Murphy, and Ruškuc considered sorting with two increasing stacks in series, i.e., two stacks whose entries must be in increasing order when read from top to bottom. The second stack must be such that the entries are always in increasing order to successfully sort a permutation. However, this restriction places new limitations on the first stack. We consider a different limitation for the first stack; one where the entries must be in decreasing order from top to bottom. This decreasing restriction creates a sortable permutation class enumerated by the Schröder numbers. We show a bijection between these permutations and a class of lattice paths also known to be enumerated by the Schröder numbers. (Received August 10, 2015)