1048-14-115 **Frank Sottile** (sottile@math.tamu.edu), Texas A&M University, Department of Mathematics, College Station, TX 77843-3368, **Ravi Vakil** (vakil@math.stanford.edu), Stanford University, Department of Mathematics, Stanford, CA 94305-2125, and **Jan Verschelde*** (jan@math.uic.edu), University of Illinois at Chicago, Dept. of Math., Stat., and CS, 851 S. Morgan St. (m/c 249), Chicago, IL 60607-7045. *Littlewood-Richardson Homotopies for Schubert Problems.* Preliminary report.

Given a sequence of nested linear spaces (called flags) and prescribed dimensions for each flag, a Schubert problem asks for all planes that meet the given flags at the prescribed dimensions. A geometric Littlewood-Richardson rule developed by Ravi Vakil leads to homotopy algorithms to solve a Schubert problem. Littlewood-Richardson homotopies are the families of polynomial systems constructed by these homotopy algorithms. Symbolically, homotopy algorithms degenerate a moving flag, using polynomial equations to keep conditions imposed by other flags fixed. At the degenerate configuration of the flag, a linear system provides a start solution for a path to track by numerical continuation methods. The specialization of a flag follows a combinatorial checker game. For sufficiently generic Schubert problems, the number of paths to track is optimal. The Littlewood-Richardson homotopies are implemented using the path trackers of the software package PHCpack. (Received February 02, 2009)