

1086-14-1108      **Nickolas Hein\*** ([nhein@math.tamu.edu](mailto:nhein@math.tamu.edu)), Texas A&M University, Department of Mathematics,  
Mailstop 3368, College Station, TX 77843-3368. *Numerical Methods for Solving Schubert  
Problems*. Preliminary report.

A complete Schubert problem is given by a system of determinantal equations, which are wildly overdetermined. This aids in Gröbner basis calculations, but encumbers numerical methods. Using duality, I recast the overdetermined system (more equations than variables) as a square system, adding variables but reducing from high-degree determinants to bilinear equations. This often boosts efficiency tremendously.

Numerical methods apply to the new system. Regeneration (solving equation by equation), is valid even for incomplete Schubert problems, i.e. unions of curves, surfaces, etc. This solves Schubert problems which are otherwise infeasible. Parameter homotopy is even faster when it may be used. Both methods parallelize wonderfully.

In this talk I will transform determinantal equations to bilinear equations, we will see the differing strengths of each method, and I will give computational evidence in favor of the new system of equations. (Received September 24, 2012)