1057-65-342   **Bryan W Lewis*** (`bwaynelewis@gmail.com`), 3876 Humphrey Rd., Richfield, OH 44286. *How good are Krylov methods for nonsymmetric discrete ill-posed problems?* Preliminary report.

We observe that the Krylov subspaces used by the GMRES and range-restricted GMRES (RRGMRES) methods may contain much better regularized solutions than subspaces generated by the truncated SVD and vice-versa for common discrete ill-posed problems, demonstrating that neither approach is indispensable. The existence of a good solution in the Krylov subspaces, however, is not sufficient for the GMRES or RRGMRES methods to produce a good solution. We propose new computationally-simple solution methods based on least-angle regression that can produce better results than the ordinary least-squares solution method used by GMRES and RRGMRES. (Received January 25, 2010)