

1106-VL-2925 **Josef A Sifuentes*** (josefs@math.tamu.edu), **Leslie Greengard** and **Zydrunas Gimbutas**.
Randomized methods for rank-deficient linear systems.

We present a simple, accurate method for solving consistent, rank-deficient linear systems, with or without additional rank-completing constraints. Such problems arise in a variety of applications, such as the computation of the eigenvectors of a matrix corresponding to a known eigenvalue. The method is based on elementary linear algebra combined with the observation that if the matrix is rank- k deficient, then a random rank- k perturbation yields a nonsingular matrix with probability close to 1. (Received September 17, 2014)