1145-15-374   **Jon Lee*** (`jonxlee@umich.edu`). *On sparse (reflexive) generalized inverses.*

We study sparse generalized inverses H of a rank-r real matrix A. We give a "block construction" for reflexive generalized inverses having at most r^2 nonzeros. When $r = 1$, we demonstrate how minimizing the (vector) 1-norm of H among generalized inverses can be achieved by a particular reflexive generalized inverse following our block construction. When $r = 2$ and A is equivalent to a nonnegative matrix by signing rows and columns, we again demonstrate how minimizing the (vector) 1-norm of H among generalized inverses can be achieved by a particular reflexive generalized inverse following our block construction. Finally, for general r, we demonstrate how to efficiently find a reflexive generalized inverse following our block construction that is within approximately a factor of r^2 of the (vector) 1-norm of the generalized inverse having minimum (vector) 1-norm. This is joint work with Marcia Fampa (UFRJ). (Received September 04, 2018)