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The topic of sparse linear algebra is thoroughly studied and deservedly so. The level of sophistication achieved in the best algorithms is extraordinary but many of these algorithms are entirely inapplicable mod p . Linear algebra mod p suffers from a number of maladies, including the existence of non-zero vectors that are orthogonal to themselves. Yet, linear algebra lies at the heart of numerous computer algebra processes, ranging from Groebner Bases to LLL and many things in between.

This research inquires as to the best methods for handling sparse matrices mod p efficiently. We present extensive experimental results comparing and contrasting various strategies known. Many standard methods are surprisingly sub-optimal compared to alternatives that are only slightly more complex. (Received September 26, 2012)