1041-14-240 **Peter N Malkin*** (`malkin@math.ucdavis.edu`), Mathematical Sciences Building, One Sheilds Avenue, Davis, CA 95616. *Truncated Groebner bases and generating sets of lattice ideals for integer programs.* Preliminary report.

We show how algorithms for computing generating sets of lattice ideals can also be used to compute feasible solutions of any one of a family of integer linear programs; finding feasible solutions of integer linear programs is not only necessary for solving an integer linear program using a Gröbner basis as shown in 1991 by Conti and Traverso but also an interesting problem in itself. Generating sets of lattice ideals can be impractically large, so we apply the concept of truncation as presented by Thomas and Weismantel in 1995 to generating sets. We show how to compute truncated generating sets of lattice ideals without first computing the entire generating set of the lattice ideal. Lastly, we present a truncated and incremental Gröbner basis approach to solve an integer linear program. Initial results indicate that this optimization algorithm performs better than previous Gröbner basis methods. (Received August 12, 2008)

1