

1018-13-169

Florian Enescu* (fenescu@mathstat.gsu.edu), Department of Mathematics and Statistics, Georgia State University, Atlanta, GA 30303, **Priyank Kalla**, University of Utah, and **M Brandon Meredith**, Georgia State University. *Simplifiable polynomials over finite rings of integers*. Preliminary report.

Let f be a polynomial in $R[X_1, \dots, X_n]$. We call such a polynomial f simplifiable if there exist linear forms u_1, \dots, u_k in $R[X_1, \dots, X_n]$ with $k < n$ such that $f \in R[u_1, \dots, u_k]$. In the case $R = \mathbf{Z}_m$, where $m = 2^l$, determining what polynomials are simplifiable is a problem with direct applications to digital circuit design. We will discuss an algorithm that decides whether a given polynomial f is simplifiable or not in the case mentioned above. (Received March 05, 2006)