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Jarod Alper (jarod.alper@anu.edu.au), **Tristram Bogart*** (tc.bogart22@uniandes.edu.co) and **Mauricio Velasco** (mvelasco@uniandes.edu.co). *A Lower Bound for the Determinantal Complexity of a Hypersurface.*

Given a family of polynomials $\{p_n\}$, how long does it take to compute the values of p_n as a function of n? If $\det_n$ is the determinant of an n by n matrix of indeterminates, then the values of $\det_n$ can be calculated quickly via Gaussian elimination even though the determinant has $n!$ terms. So one way to show that another family $\{p_n\}$ is efficiently calculable is to reduce p_n to $\det_{m(n)}$, where $m(n)$ does not grow too rapidly with n. Leslie Valiant conjectured in 1979 that no efficient reduction is possible for the family of *permanents* $\{\mathrm{perm}_n\}$, which are superficially similar to determinants but much less well-behaved. It is known that a reduction is possible with $m(n)$ exponential in n, but the best known lower bound is quadratic in n. We prove a general result that shows among other things that for perm_3, the known upper bound of 7 is tight. (Received September 04, 2015)