1043-13-131 **Hyman Bass*** (hybass@umich.edu), 2413 School of Education, 610 E. University, Ann Arbor, MI 48109-1259. *Revisiting a differential approach to the 2-variable Jacobian Conjecture.*

Let $A = k[x_1, \ldots, x_n]$, a polynomial algebra over a char. 0 alg. closed field. Consider an extension, $A \subset B \subset \widehat{A} = k[[x]]$. A generalized Jacobian Conjecture (JC) says that the conditions – (1) B is étale over A; (2) $B^\times = k^\times$; and (3) $\mathrm{Frac}(B)$ is unirational over k – imply that $B = A$. By (1), B is a module over the Weyl Algebra $W = k[x_1, \ldots, x_n, \partial_1, \ldots, \partial_n]$, where $\partial_I = \partial\_/\partial x_i$. The Lie algebra $\underline{gl}_n$ lives in W, with basis $x_i\partial_j$ $(1 \le i, j \le n)$. Let $\underline{g}$ be a subalgebra of $\underline{gl}_n$, with univ. env. algebra $U(\underline{g})$. We showed in (*Commutative algebra, MSRI Publ. 15, pp 69-109*) that: (4) If $\dim_k(\underline{g}) > n$, then B is a torsion $U(\underline{g})$-module. Whence this approach to the JC: Given B satisfying (1), (2), and (3), and $f \in B$, we want to show that $f \in A$. Choose $\underline{g}$ as above with $\dim_k(\underline{g}) > n$. Then, by (4), there is a $\phi \neq 0$ in $U(\underline{g})$, such that (5) $\phi f = 0$. We would like to conclude from PDEs like (5) that $f \in A$. We will illustrate attempts to carry out this agenda when $n = 2$. (Received August 24, 2008)