1065-12-168 **Thomas J. Tucker*** (tjtucker@gmail.com), Math Department, University of Rochester, Rochester, NY 14610. *P-adic parametrization of orbits.*

Let $f : X \longrightarrow X$ be a morphism of varieties over a field of characteristic 0 and let x be a point on X. In many cases, one can show the orbit of x under f can be "p-adically parametrized"; that is, one can find a p-adic analytic map g from a disc in $\mathbb{C}_p$ to X such that $g(n) = f^n(x)$ for all n. The existence of such a parametrization allows one to solve the so-called "dynamical Mordell-Lang problem" for f, which states that, given a subvariety W of X, the set of n such that $f^n(x)$ is in W forms a finite union of arithmetic sequences. It also allows for the solution of various weak forms of a conjecture of Zhang on the existence of points with Zariski dense orbits. (Received September 12, 2010)