1077-37-174 **Joseph H. Silverman***, Mathematics Department - Box 1917, Brown University, Providence, RI 02912. *Number Theoretic Properties of Difference Equations Associated to Hénon Maps.* Preliminary report.

A classical Hénon map is an automorphism $\phi : \mathbb{A}^2 \to \mathbb{A}^2$ of the form $\phi(x, y) = (y + 1 - ax^2, bx)$. This Hénon map is equivalent to the polynomial difference equation $x_{n+1} = 1 - ax_n^2 + bx_{n-1}$. Hénon maps are examples of regular affine automorphisms, which are automorphisms $\phi : \mathbb{A}^N \to \mathbb{A}^N$ whose extension to a rational map $\Phi : \mathbb{P}^N \to \mathbb{P}^N$ has the property that at least one of Φ or Φ^{-1} is defined at every point of $\mathbb{P}^N$. In this talk I will discuss number theoretic properties of Hénon difference equations and more general regular affine automorphisms. (Received August 07, 2011)