1108-14-585 **Caleb McKinley Shor*** (cshor@wne.edu), Department of Mathematics, Western New England University, 1215 Wilbraham Rd, Springfield, MA 01119. *Ordinary and higher-order Weierstrass points on superelliptic curves.*

Given an algebraic curve C of genus g defined over $\mathbb{C}$, we say a point P is a Weierstrass point if $\dim(\mathcal{L}(gP)) > 1$, where $\mathcal{L}(D)$ is the Riemann-Roch space associated to a divisor D. One can generalize this to define a higher-order Weierstrass point (which we call a q-Weierstrass point, for $q \geq 1$), and one can also talk about the weight of a Weierstrass point. For any curve of genus $g > 1$ and any $q \geq 1$, there are a finite number of q-Weierstrass points with bounded weights.

The subject of Weierstrass points is an interesting one with immediate applications. In particular, the set of Weierstrass points is an invariant of a curve which is useful in studying the automorphism group of a curve.

In this talk, we will consider Weierstrass points on superelliptic curves, which are curves of the form $y^n = f(x)$ for $f(x)$ a separable polynomial of degree d. Under a mild hypothesis, it is well known that the branch points of such curves are Weierstrass points. We will investigate the weights of these branch points for given values of n and d and use them to obtain some asymptotic results. We will also discuss arithmetic properties of these points. (Received January 20, 2015)