1106-30-1595 **Michael J Miller*** (millermj@lemoyne.edu), Dept of Mathematics, Le Moyne College, Syracuse, NY 13214. *A local extremum with multiple roots for the Sendov conjecture.* Preliminary report.

Let $S(n)$ be the set of all polynomials of degree $n$ with all roots in the unit disk, and define $d(P)$ to be the maximum of the distances from each of the roots of a polynomial $P$ to that root's nearest critical point. In this notation, Sendov's conjecture asserts that $d(P) \leq 1$ for every $P \in S(n)$.

Define $P \in S(n)$ to be *locally extremal* if $d(P) \geq d(Q)$ for all nearby $Q \in S(n)$, and note that identifying all locally extremal polynomials would settle the Sendov conjecture.

Previously constructed locally extremal polynomials have all had simple roots. In this paper, we construct a locally extremal polynomial of degree 10 with multiple roots. (Received September 14, 2014)