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Paul Baginski* (baginski@math.berkeley.edu), Department of Mathematics, University of California, Berkeley, 970 Evans Hall #3840, Berkeley, CA 94720-3840. *Elasticity in Polynomial and Power Series Rings.*

The elasticity of a commutative, cancellative, atomic monoid M measures how far M is from being a half-factorial domain. The elasticity of an element is defined as the ratio of the length of the longest factorization into irreducibles to the length of the shortest factorization; the elasticity of the monoid is simply the supremum of the elasticities of all its elements. In a sense, elasticity encapsulates the worst-case scenario of non-unique factorization in the monoid. However, it is of interest to know whether all intermediately bad non-unique factorizations also occur. This question can be captured by the notion of full elasticity and its asymptotic counterpart. We will provide some general techniques for determining full elasticity and asymptotic full elasticity for arbitrary monoids. As a particular example, we will analyze factorization in subrings of $K[x]$ and $K[[x]]$ for K an arbitrary field. These subrings both illustrate the utility of our methods, as well as the varied complications that can arise. Our general techniques for these specific rings yield additional results which may assist in computing the presently unknown elasticities of these rings when K is finite. (Received August 30, 2005)