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Alan Loper and Thomas G. Lucas^{*} (tglucas@email.uncc.edu), Department of Mathematics and Statistics, University of North Carolina Charlotte, Charlotte, NC 28223. *Constructing chains* of primes in power series rings. Preliminary report.

Let V be a one-dimensional non-discrete valuation domain with maximal ideal M and corresponding value group the real numbers. In 1973, Jimmy Arnold showed that the ring of formal power series V[[x]] is infinite dimensional. The goal here is to give a much more explicit way to both describe and construct infinite chains of primes in V[[x]]. We present a way to relate each nonzero power series in M[[x]] to a certain type of continuous function on the set of positive real numbers. This relation provides a way to construct chains of primes of V[[x]] such that each prime in one these chains is properly contained in the prime ideal M[[x]] and each properly contains the prime MV[[x]]. Each chain has the property that if $\{P_n\}$ is a countable subset of the chain, then $P = \bigcup P_n$ and $Q = \bigcap P_n$ are members of the chain (thus P is properly contained in M[[x]] and Q properly contains MV[[x]]). (Received September 26, 2005)