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Alan Loper and **Thomas G. Lucas*** (tg1ucas@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)