962-13-915 **Evan Houston** (`eghousto@newmail.uncc.edu`), Department of Mathematics, University of North Carolina - Charlotte, Charlotte, NC 28223, **Alan Loper*** (`lopera@math.ohio-state.edu`), Department of Mathematics, Ohio State University - Newark, Newark, OH 43055, and **Thomas G Lucas** (`tglucas@email.uncc.edu`), Department of Mathematics, University of North Carolina - Charlotte, Charlotte, NC 28223. *Prime ideals in power series rings.* Preliminary report.

Suppose that D is a finite dimenisonal, Noetherian domain. Then the ring $D[[x]]$ of formal power series over D in the variable x is also a finite dimensional, Noetherian domain. However, if D is not Noetherian, $D[[x]]$ can be infinite dimensional even when D has dimension one. For example this occurs if D is a one-dimensional, non-discrete valuation domain or a nonNoetherian almost Dedekind domain. This result was established in the 1970's by Arnold and explored further in a recent paper of Kang. Both Arnold and Kang used nonconstructive existence proofs to establish the infinite dimensionality. In this paper we employ ultrafilters to construct and analyze infinite chains of prime ideals in the domains considered by Arnold and Kang. (Received September 28, 2000)