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LINCOLN, NE 68588-0130. *Prime ideals in Noetherian polynomial and power series integral
domains*. Preliminary report.

We describe the set $\text{Spec } B$ of prime ideals of a homomorphic image B of a three-dimensional mixed polynomial/power series ring; that is, $B = R[[x]][y]/Q$, $R[y][[x]]/Q$ or $R[[x]][[y]]/Q$, where R is a one-dimensional Noetherian domain, x and y are indeterminates, Q is a height-one prime ideal of the appropriate ring, and $x \notin Q$. We present properties and a genetic code that describes $\text{Spec } B$ as a partially ordered set, where the order is given by inclusion.

If R is a countable ring with infinitely many maximal ideals, these axioms characterize the prime spectra that occur; each genetic code can be realized with the coefficient ring $R = \mathbb{Z}$, the ring of integers. We also give the prime spectra that arise if R is countable and has finitely many maximal ideals; such prime spectra occur for R a localization of \mathbb{Z} , and for R a countable Henselian ring. (Received August 09, 2013)