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The prime spectrum of a ring of integer-valued rational functions. Preliminary report.

When V is a DVR with finite residue field, it is well known that the prime ideals of the ring Int(V) of integer-valued polynomials on V which lie over the maximal ideal of V are naturally indexed by the elements of the M-adic completion of V (where M is the maximal ideal of V). If V is a rank-one valuation domain which is not discrete or which has infinite residue field then Int(V) = V[x]. The situation with the ring IntR(V) of integer-valued rational functions on V is somewhat different. If V is a valuation domain it is known that IntR(V) is a Prufer domain whenever the residue field of V is not algebraically closed. Except for the special case where V is a DVR with finite residue field there is very little know about the prime spectrum of IntR(V) however. In this talk we classify the prime ideals for many domains IntR(V) other than this special case. (Received January 24, 2005)