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Roger Wiegand* (rwiegand@math.unl.edu), Department of Mathematics, University of Nebraska, Lincoln, NE 68588-0130. *Semigroups of torsion-free modules*. Preliminary report.

Let (R, \mathfrak{m}) be a commutative, Noetherian, local domain of dimension one, and assume that the \mathfrak{m} -adic completion of R has no non-zero nilpotent elements. Given a family \mathcal{S} of finitely generated R -modules, with \mathcal{S} closed under finite direct sums and under isomorphism, we consider the semigroup $V(\mathcal{S})$ of isomorphism classes of elements in \mathcal{S} , with the operation induced by the direct sum. In earlier work by the author and others, a complete set of invariants was given for the semigroup $V(R\text{-mod})$, where $R\text{-mod}$ is the class of *all* finitely generated modules. For the class \mathcal{F} of *torsion-free* finitely generated modules, the semigroup $V(\mathcal{F})$ has so far defied description, though some progress has been made. For example, the description is relatively simple when each analytic branch has infinite Cohen-Macaulay type. In this talk I will discuss what is known about $V(\mathcal{F})$ and what remains to be done. (Received September 11, 2008)