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Nicholas Baeth* (baeth@ucmo.edu) and **Alfred Geroldinger**. *Arithmetic of Direct-sum Decompositions of Modules*. Preliminary report.

Let (R, \mathfrak{m}) be a one-dimensional Noetherian local ring with \mathfrak{m} -adic completion \hat{R} . Given the structure of how the minimal primes of \hat{R} lie over the minimal primes of R together with the ranks of indecomposable torsion-free \hat{R} -modules, one can completely describe the monoid of torsion-free R -modules with operation given by direct sum. In this talk we consider the arithmetic of the submonoid constructed using only certain indecomposable \hat{R} -modules with “trivial” ranks, and thus exhibit non-uniqueness in direct-sum decompositions of torsion-free R -modules. (Received August 23, 2012)