962-13-1176 **Karl Kattchee** (`kkattche@math.unl.edu`), Department of Mathematics and Statistics, University of Nebraska, Lincoln. *Monoids and Direct Sum Decompositions of Modules.* Preliminary report.

Let R be a one-dimensional local ring whose completion $\widehat{R}$ is reduced, and let M be a finitely generated R-module. Let $V_1, V_2, \ldots, V_n$ be the distinct isomorphism classes of indecomposable $\widehat{R}$-modules which arise as direct summands of $\widehat{M}$. Let $\mathbf{N}$ denote the set of non-negative integers.

Define a monoid $\Lambda(M) \subseteq \mathbf{N^n}$ as follows:

$$\lambda = (\lambda_1, \ldots, \lambda_n) \in \Lambda(M) \Longleftrightarrow \bigoplus_{i=1}^{n} \lambda_i V_i \cong \widehat{L} \text{ for some } R\text{-module } L.$$

In case R is a domain and M is torsion-free, it is known that $\Lambda(M)$ is an expanded affine monoid, equivalently, $\Lambda(M) = \ker(\mathcal{A}) \cap \mathbf{N^n}$ for some integer matrix $\mathcal{A}$. We prove this fact without the hypotheses that R be a domain and M be torsion-free. We also discuss the following question: Given R as above, exactly which expanded affine monoids are of the form $\Lambda(M)$ for some finitely generated R-module M?

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