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W. Hassler (wolfgang.hassler@uni-graz.at), R. Karr* (rkarr@fau.edu), L. Klingler (klingler@fau.edu) and R. Wiegand (rwiegand@math.unl.edu). Indecomposable modules of large multiplicity over local rings. Preliminary report.

Suppose R is a commutative Noetherian local ring such that there is a bound on the multiplicities of the indecomposable finitely generated R-modules. Results of H. Bass and R. Warfield imply that either R is an Artinian principal ideal ring or R is one-dimensional. In the former case, every indecomposable finitely generated R-module is cyclic. In the latter case, the structure of indecomposable R-modules can be much more intricate. The authors obtained the following main result: If R is one-dimensional and (as above) there is a bound on the multiplicities of the indecomposable finitely generated R-modules then R is necessarily the image of a so-called "Dedekind-like" ring. Intuitively, a Dedekind-like ring is very close to its normalization, and the category of its finite-length modules is tame. We will sketch a proof of the main result. (Received August 28, 2005)