1056-13-2054 **Andrew Crabbe*** (`amcrabbe@syr.edu`). *Building Indecomposable Modules.* Preliminary report.
A common way to understand a ring is to study certain subcategories of its modules, in particular, the indecomposable objects in such categories. Over rings with dimension 0, it's reasonable to look at the entire category of modules, however, over larger rings, its beneficial to restrict to a more tractable collection. The subcategory of greatest interest has been that of all maximal Cohen-Macaulay modules. By knowing the number of indecomposable maximal Cohen-Macaulay modules or whether there is a bound on the "size" of these modules, one can gain important information about the ring (for instance, the dimension of its singular locus). But what happens if you go away from the subcategory of maximal Cohen-Macaulay modules?

One purpose of this talk is to show that over certain rings with dimension greater than 1, one can build indecomposable modules that are arbitrarily "large" (where "large" could refer to the multiplicity, or in our case, the rank on the punctured spectrum), even if the ring does not permit the construction of arbitrarily "large" indecomposable maximal Cohen-Macaulay modules. These constructions are achieved using results for the generalized Hilbert-Samuel polynomials. (Received September 23, 2009)