Meeting: 998, Houston, Texas, SS 21A, Special Session on Homological Algebra of Commutative Rings

998-13-331 **Ragnar-Olaf Buchweitz*** (ragnar@math.utoronto.ca), Dept. of Mathematics, University of Toronto, 100 St.George Street, Toronto, Ontario M5S 3G3, Canada, and **Graham Leuschke** (gleuschk@math.toronto.edu), Dept. of Mathematics, Univ. of Toronto, 100 St.George Street, Toronto, Ontario M5S 3G3, Canada. *Maximal Cohen-Macaulay Modules over the Generic Determinant.* Preliminary report.

In a recent preprint, math.AC/0306126 "Can one factor the classical adjoint of a generic matrix?", George M. Bergman asks essentially what are the possible Maximal Cohen-Macaulay modules (MCMs) of small rank over the generic determinant, more precisely, what are possible extensions of MCMs that have the cokernel of the adjoint matrix as their middle term? He shows, using a recent result by De Concini and Reichstein about maps between Grassmannians, that there are no such extensions in characteristic zero for generic matrices of odd size and that for even size only extensions where one of the ends is of rank one could be possible. We will show here that (1) There are indeed (lots of) nontrivial factorizations in the case of even size at least 4 over any ring. (This implies a positive dimensional variety of nonisomorphic rank two MCMs.) (2) There are no such extensions for size equal to 3 in any characteristic. (we hope to settle size 5 size before coming to Houston!)

More generally, it is known by work of Bruns-Vetter that there are just three MCMs of rank one over the generic determinant, and one may thus ask, as Bergman does, what about MCMs with small numbers of generators? We present preliminary results in this direction, using, inter alia, results by Herzog-Kuehl. (Received March 01, 2004)