

**Meeting:** 1003, Atlanta, Georgia, SS 20A, AMS Special Session on Commutative Algebra, I

1003-13-1178      **Geoffrey D Dietz\*** (dietzg@umich.edu), Department of Mathematics, University of Michigan,  
525 E University Ave, Ann Arbor, MI 48109-1109. *Solid and big Cohen-Macaulay algebras in  
positive characteristic.*

In 1994 Mel Hochster introduced the notion of solidity for modules. For a domain  $R$ , a module  $M$  is called *solid* if there exists a nonzero  $R$ -linear map  $M \rightarrow R$ . If  $S = M$  is an  $R$ -algebra, then  $S$  is called a *solid algebra*. Hochster has shown that if  $R$  is a complete local domain, then an  $R$ -algebra that maps to a big Cohen-Macaulay (C-M) algebra for  $R$  is solid over  $R$ . He also demonstrated that in equal characteristic zero, there exist solid algebras that do not map to a big C-M algebra. Whether every solid algebra in positive characteristic maps to some big C-M algebra is still an open question in general although it is true in dimension at most two.

We will present a family of equational problems that govern the answer to this question. These families depend only on the dimension of the base ring and two independent positive integers. We will also show some of the cases in which these problems can be settled. (Received October 04, 2004)