

Meeting: 1004, Bowling Green, Kentucky, SS 11A, Special Session on Commutative Ring Theory

1004-13-58 **Thomas G. Lucas*** (tglucas@uncc.edu), Department of Mathematics and Statistics, University of North Carolina Charlotte, Charlotte, NC 28223. *The diameter of the zero divisor graph of $R[[x]]$.*

Let R be a commutative ring with nonzero zero divisors. Form a graph $\Gamma(R)$ with vertices the nonzero zero divisors and with edges the set of distinct pairs $\{a, b\}$ where $ab = 0$. It is known that the diameter is always less than or equal to 3 and $\text{diam}(\Gamma(R)) \leq \text{diam}(\Gamma(R[[x]]))$. If R is reduced, it is possible to completely characterize when $\text{diam}(\Gamma(R[[x]])) = 2$ strictly in terms of the ideals of R . Various examples are given to show the difficulties in trying to do the same for nonreduced rings. (Received January 14, 2005)