1083-13-111 **Shane P. Redmond***, 313 Wallace Bldg, 521 Lancaster Ave, Richmond, KY 40475. *Is it time for a new definition of the zero-divisor graph?* Preliminary report.

Given a commutative ring R with 1, the most common definition of the zero-divisor graph $\Gamma(R)$ defines the vertices to be the nonzero zero-divisors of R and defines two *distinct* vertices x and y to be adjacent when $xy = 0$. This definition does not allow a "loop," or an edge from a vertex x to itself, indicating an element x such that $x^2 = 0$. Given a finite commutative ring R with 1, it is a straightforward exercise to create $\Gamma(R)$ with or without looped vertices. A solution to the inverse problem, using only $\Gamma(R)$ to identify the ring R, will be presented (up to certain local factors) for graphs that have loops. The importance these loops can play in the future study of ideal-based graphs, a natural generalization of the zero-divisor graph, will also be investigated. (Received August 23, 2012)