1106-05-880 **Mary K Flagg*** (flaggm@stthom.edu). *Power Graphs of Finite Associative Rings.*

The directed power graph of a semigroup $S$ is the graph with vertices the elements of $S$ and an arc $a \to b$ if $a \neq b$ and $b = a^n$ for some positive integer $n$. Power graphs have been studied in the categories of finite semigroups and finite groups. Extending this construction to the category of finite associative rings, consider how the power graphs of the multiplicative semigroup and additive abelian group of a ring are connected to its algebraic properties. It is well known that a finite ring is the ring direct sum of rings of prime power order. Therefore, the investigation has two directions, rings of order $p^n$ for some prime $p$ and positive integer $n$ and direct sums of rings with different prime power orders. Results include the fact that a ring of square-free order is determined by the structure of its multiplicative power graph. (Received September 08, 2014)