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Jack Maney* (jmaney@usd.edu), Department of Mathematical Sciences, The University of South Dakota, 414 E. Clark St., Vermillion, SD 57069. *Homology on Irreducible Divisor Graphs*.

Let R be an integral domain, and let $x \in R$ be a nonzero nonunit that can be factored into irreducibles. The irreducible divisor graph of x , denoted $G(x)$ is the graph whose vertices are the nonassociate irreducible divisors of x . Given distinct vertices y, z we put an edge between y and z if and only if yz divides x . Further, if y^n divides x but y^{n+1} does not divide x , we put $n - 1$ loops on the vertex y .

Inspired by techniques of R. Akhtar and L. Lee for studying homology on zero divisor graphs, we define a semi-simplicial complex on irreducible divisor graphs. We use the associated homology groups on irreducible divisor graphs to give a characterization of UFDs. (Received January 07, 2007)