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THE ARMENDARIZ GRAPH OF A RING

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Abstract

In this paper we initiate the study of Armendariz graph of a commutative ring R and investigate the basic properties of this graph such as diameter, girth, domination number, etc. The Armendariz graph of a ring R, denoted by $A(R)$, is an undirected graph with nonzero zero-divisors of $R[x]$ (i.e., $Z(R[x])^*$) as the vertex set, and two distinct vertices $f(x) = \sum_{i=0}^{n} a_i x^i$ and $g(x) = \sum_{j=0}^{m} b_j x^j$ are adjacent if and only if $a_i b_j = 0$, for all i, j. It is shown that $A(R)$, a subgraph of $\Gamma(R[x])$, the zero divisor graph of the polynomial ring $R[x]$, have many graph properties in common with $\Gamma(R[x])$.

Keywords: Armendariz property, diameter, girth, zero-divisor graph.

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