

ON THE CONNECTIVITY OF THE ANNIHILATING-IDEAL GRAPHS

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Abstract

Let R be a commutative ring with identity and $\mathbb{A}^*(R)$ the set of non-zero ideals with non-zero annihilators. The *annihilating-ideal graph* of R is defined as the graph $\mathbb{AG}(R)$ with the vertex set $\mathbb{A}^*(R)$ and two distinct vertices I_1 and I_2 are adjacent if and only if $I_1 I_2 = (0)$. In this paper, we examine the presence of cut vertices and cut sets in the annihilating-ideal graph of a commutative Artinian ring and provide a partial classification of the rings in which they appear. Using this, we obtain the vertex connectivity of some annihilating-ideal graphs.

Keywords: annihilating-ideal graph, local ring, nilpotency, cut vertex.

2010 Mathematics Subject Classification: 05C99, 53C35, 13A99.

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Received 6 May 2015

Revised 29 June 2015