DOMINATION NUMBER IN THE ANNIHILATING-SUBMODULE GRAPH OF MODULES OVER COMMUTATIVE RINGS

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ABSTRACT. Let M be a module over a commutative ring R. The annihilating-submodule graph of M, denoted by $AG(M)$, is a simple undirected graph in which a non-zero submodule N of M is a vertex if and only if there exists a non-zero proper submodule K of M such that $NK = (0)$, where NK, the product of N and K, is denoted by $(N : M)(K : M)M$ and two distinct vertices N and K are adjacent if and only if $NK = (0)$. This graph is a submodule version of the annihilating-ideal graph and under some conditions, is isomorphic with an induced subgraph of the Zariski topology-graph $G(\tau_T)$ which was introduced in [H. Ansari-Toroghy and S. Habibi, Comm. Algebra, 42(2014), 3283-3296]. In this paper, we study the domination number of $AG(M)$ and some connections between the graph-theoretic properties of $AG(M)$ and algebraic properties of module M.

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