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خلاصه مقاله:

Let R be a commutative ring with identity and M an R-module. In this paper, we associate a graph to M, say$\Gamma(RM)$, such that when M=R, $\Gamma(RM)$ coincide with the zero-divisor graph of R. Many well-known results by D.F. Anderson and P.S. Livingston have been generalized for $\Gamma(RM)$. We Will show that $\Gamma(RM)$ is connected with diam $\Gamma(RM) \leq 3$ and if $\Gamma(RM)$ contains a cycle, then $\Gamma(RM) \leq 4$. We will also show that $\Gamma(RM) = \emptyset$ if and only if M is a prime module. Among other results, it is shown that for a reduced module M satisfying DCC on cyclic submodules, gr $(\Gamma(RM)) = \infty$ if and only if $\Gamma(RM)$ is a star graph. Finally, we study the zero-divisor graph of free R-modules.

کلمات کلیدی:

Annilhilator, diameter, girth, reduced module, zero-divisor graph

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