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DEPENDENT ELEMENTS OF REVERSE DERIVATIONS ON SEMIPRIME RINGS

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Abstract

In this paper, we prove that if d is a commuting reverse derivation of a semiprime ring R of char. $\neq 2$, then $a \in D(d)$, where $D(d)$ is the collection of all dependent elements of d if and only if $a \in Z$ and $ad(x^2) = 0$ for all $x \in R$. Using this, we prove the decomposition of R. Also we show that, if d is a reverse derivation of a semiprime ring R, S is a right ideal of R and $d(xr) \in Z$ for all $x \in S$, $r \in R$, then $[S, R]\ d(R) = 0$. Using this, we give another proof of the decomposition of R. That is, we prove that if d is commuting, then there exist ideals U and V of R such that $U \oplus V$ is an essential ideal of R, $U \cap V = \{0\}$, $d = 0$ on U, $d(V) \subseteq V$ and d acts freely on V.

Key Words : *Commuting reverse derivation, Dependent element and free action.*

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