SYMMETRIC SKEW 3-REVERSE DERIVATIONS WITH SEMIPRIME RINGS

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ABSTRACT

Suppose α be an anti automorphism in R , $D: R \times R \times R \rightarrow R$ is a symmetric skew 3-reverse derivation with anti automorphism α . f trace in D then $D(f(l), l, l) = 0$, every $l \in I$, implies $D = 0$.

KEYWORDS: Reverse Derivation and Anti automorphism.

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INTRODUCTION

Faiza Shujat and Abuzaid Ansari [4] has studied symmetric skew 3-derivations on prime and semiprime rings. This paper proved that in semi prime ring with a non zero symmetric skew 3-reverse derivation is commutative.

Preliminaries

In this paper, If 2, 3- torsion free semiprime ring R with center Z , α is anti automorphism in R . The notation $[x, y]$ is commutator $xy - yx$. Semi prime if $xRx = 0$, then $x = 0$.

Before starting our main theorem, using some results.

Let D be a symmetric then

$$D(-l, m, n) = -D(l, m, n), \text{ all in } R. \quad (1)$$

Theorem 1

$D: R^3 \rightarrow R$ is symmetric skew 3-reverse derivation in R on f is $D(f(l), l, l) = 0$, all in R . Implies $D = 0$.

Proof

Assume $D(f(l), l, l) = 0$, l in R . (2)

Linearization of (2) and replace m by $-m$, substitute $m + n$ for m , replacing n by wn and using symmetric in D , we have

$$6\alpha(D(m, m, n))D(w, l, l) + 6\alpha(D(m, m, w))D(\alpha(n), l, l) + 24\alpha(D(m, n, l))D(w, l, m) + 24\alpha(D(m, w, l))D(\alpha(n), l, m) + 6\alpha(D(l, l, n))D(w, n, n) + 6\alpha(D(l, l, w))D(\alpha(n), m, m) = 0, \quad \text{for all } l, m, n, w \in R. \quad (3)$$

$$D(l, l, n)D(w, l, l) = 0, \text{ any in } R. \quad (4)$$

Substitute w by uw equation (4) and using equation (4) obtain

$$D(l, l, n)uD(w, l, l) = 0$$

Semi prime ness, $D(w, l, l) = 0$, for all $w, l \in R$.

By linearization implies $D(w, l, m) = 0$, any $w, l, m \in R$.

Implies $D = 0$.

REFERENCES

1. AjdaFosner.: *Prime and semiprime rings with symmetric skew 3-derivations*, *Aequat.Math.*87 (2014), 191-200.
2. C. Jaya Subba Reddy, V. Vijaya Kumar & K. Hemavathi, "Prime Ring with Symmetric Skew 3 - Reverse Derivation", *International Journal of Mathematics and Computer Applications Research (IJMCAR)* , Vol. 4, Issue 6, pp, 69-74
3. Argac, N.: *On prime and semiprime rings with derivations*. *Algebra Colloq.* 13(2006),371-380.
4. K. Chennakesavulu, C. Jaya Subba Reddy, A. Siva Kameswara Kumar & K. Nagesh, "The Commutativity of Rings With Left Multiplicative Generalized Derivations", *International Journal of Educational Science and Research (IJESR)* , Vol. 8, Issue 6, pp, 53-64
5. Bresar.M. and Vukman.J.: *On some additive mappings in rings with involution*, *Aequationes Math.*38(1989),178-185.
6. FaizaShujatandAbuzaid Ansari.: *Symmetric skew 4-derivations on prime rings*, *J. Math. Comput. Sci.* 4 (2014), No.4, 649-656
7. Sharma Poonam, Kaur Kamaldeep, Chawla Amit, Singh Ranjodh, & Singh Rahuldev Dhawan R.K, "A Review on Biological Activities of Quinoline Derivatives", *BEST: Journal of Management, Information Technology and Engineering (BEST: JMITE)* ,Vol. 2, Issue 1, pp, 1-14
8. Jaya SubbaReddy.C et al.: *prime ring with symmetric skew 3-reverse derivations*, *International Journal of Mathematics and Computer Applications Research*, Vol. 4, Issue 6,(2014), 69-74.
9. Revathi Pandian, "A Study on Financial Derivatives (Futures & Options)" , *IMPACT: International Journal of Research in Business Management (IMPACT: IJRBM)* , Vol. 3, Issue 3, pp, 1-15
10. Jung, Y.S, Park, K.H.: *On prime and semiprime rings with permuting 3-derivations*.*Bull.Korean Math.Soc.*44(2007),789-794.
11. Park, K.H.: *On prime and semiprime rings with permuting n-derivations*.*J.ChungcheongMath.Soc.*22(2009),451-458.
12. Posner,E.C.: *Derivations in prime rings*.*Proc.Am.Math.Soc.*8(1957),1093-1100.

13. Samman.M. and Alyamani. N.: *Derivations and reverse derivations in semi prime rings. International Mathematical Fourm*, 2, no.39(2007),1895-1902.
14. J. Vukman.: *Symmetric biderivations on prime and semiprime rings, Aequationes Math.*38(1989), 245-254.
15. KotteAmaranadha Reddy et al.: *Review on Orthogonal Derivation in Rings, Research Journal of pharmacy and Technology*,12, no 4 (2019),1991-1996.
16. J. Vukman.:*Two results concerning symmetric biderivations on prime rings, Aequationes Math.* 40 (1990), 181-189.