

Derivation in Prime Rings and Banach Algebra¹

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Abstract

Let R be a prime ring of characteristics different from 2 and 3.
If there exists a nonzero derivation d from R to itself that the map
 $x \rightarrow [[[[d(x), x], x], x], x]$ is centralizing on R then $d = 0$. Combining
this result together with the result of Sinclair and Johnson, we extend
the Singer-Wermer theorem and its application in Banach algebra. Finally,
we conclude some open problems.

Mathematics Subject Classifications: 16A12, 16A70, 16W25, 16N60, 46K15

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