

Research Article (4)

Abdelkarim Boua, **Mahmoud Mohammed El-Soufi** and Ahmed Yunis Abdelwanis, *σ -Commuting and σ -Centralizing Anti-homomorphisms*, Bulletin of the Iranian Mathematical Society, 47(2021), 1423–1435.

<https://doi.org/10.1007/s41980-020-00449-8>

Accepted	Published
01 August 2020	25 August 2020

Abstract

Let R be a semiprime ring with center $Z(R)$ and with extended centroid C and let $\sigma : R \rightarrow R$ be an automorphism. Assume that $\tau : R \rightarrow R$ is an anti-homomorphism, such that the image of τ has small centralizer. It is proved that the following are equivalent: (1) $x^\sigma x^\tau = x^\tau x^\sigma$ for all $x \in R$; (2) $x^\sigma + x^\sigma \in Z(R)$ for all $x \in R$; (3) $x^\sigma x^\tau \in Z(R)$ for all $x \in R$. In this case, there exists an idempotent $e \in C$, such that $(1 - e)R$ is a commutative ring and the semiprime ring eR is equipped with an involution $\tilde{\tau}$, which is induced canonically by τ . Note that one can easily obtain the main result in Lee (Commun Algebra 46(3): 1060–1065, 2018) when $\sigma = id_R$.