

Classical left regular left quotient ring of a ring and its semisimplicity criteria

V. V. Bavula

University of Sheffield (UK)

v.bavula@sheffield.ac.uk

Key Words: Goldie's Theorem, the classical left quotient ring, the classical left regular left quotient ring.

Mathematics subject classification 2010: 16P50, 16P60, 16P20, 16U20.

Abstract

Let R be a ring, \mathcal{C}_R and ${}'\mathcal{C}_R$ be the set of regular and left regular elements of R ($\mathcal{C}_R \subseteq {}'\mathcal{C}_R$). Goldie's Theorem is a semisimplicity criterion for the classical left quotient ring $Q_{l,cl}(R) := \mathcal{C}_R^{-1}R$. Semisimplicity criteria are given for the classical left regular left quotient ring ${}'Q_{l,cl}(R) := {}'\mathcal{C}_R^{-1}R$. As a corollary, two new semisimplicity criteria for $Q_{l,cl}(R)$ are obtained (in the spirit of Goldie).