



**HACETTEPE ÜNİVERSİTESİ MATEMATİK BÖLÜMÜ  
GENEL SEMİNERİ**

**(HACETTEPE UNIVERSITY MATHEMATICS  
GENERAL SEMINAR)**

**Tarih (Date):** 17.05.2017 Çarşamba (Wednesday)

**Saat (Time):** 15:00

**Yer (Place):** Yaşar Ataman Seminer Salonu

**Konuşmacı (Speaker):** Prof. V. V. Bavula (University of Sheffield, UK)

**Başlık (Title):** The classical left regular left quotient ring of a ring and its semisimplicity criteria

# The classical left regular left quotient ring of a ring and its semisimplicity criteria

V. V. Bavula (University of Sheffield, UK)

## Abstract

Let  $R$  be a ring,  $\mathcal{C}_R$  and  ${}'\mathcal{C}_R$  be the set of regular (i.e., non-zero-divisor) and left regular elements of  $R$ , respectively ( $\mathcal{C}_R \subseteq {}'\mathcal{C}_R$ ). Goldie's Theorem (1958, 1960) 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). Applications are given for the algebra of polynomial integro-differential operators.