

# ICRAMCS 2026

THE EIGHTH EDITION OF THE INTERNATIONAL CONFERENCE ON  
RESEARCH IN APPLIED MATHEMATICS AND COMPUTER SCIENCE  
April 23-24-25, 2026 | Marrakech, Morocco



## Commutativity in Quotient Near-Rings via Left Derivations

### Communication Info

Slimane EL AMRANI<sup>1</sup>  
Abderrahmane RAJI<sup>1</sup>

<sup>1</sup>LMACS Laboratory, Faculty  
of Sciences and Technology,  
Sultan Moulay Slimane  
University, Beni Mellal,  
Morocco

### Keywords:

- (1) Prime near-rings
- (2) Left derivations
- (3) Commutativity

### Abstract

Throughout this paper,  $N$  denotes a right near-ring. An additive mapping  $d : N \rightarrow N$  is called a left derivation if  $d(xy) = d(x)y + d(y)$  for all  $x, y \in N$ . An additive mapping  $H : N \rightarrow N$  is said to be a multiplier if  $H(xy) = xH(y) = H(x)y$  for all  $x, y \in N$ . A normal subgroup  $P$  of  $(N, +)$  is called a left ideal (respectively, a right ideal) if  $P N \subseteq P$  (respectively,  $y(x + p) - yx \in P$  for all  $x, y \in N$  and  $p \in P$ ). If  $P$  is both a left and a right ideal, then it is called an ideal of  $N$ . We denote by  $N/P$  the quotient near-ring. Let  $H$  be a multiplier and  $d$  a left derivation on  $N$ . We define the induced mappings  $H$  and  $d$  on  $N/P$  by  $\tilde{H}(\bar{x}) = H(x)$  and  $\tilde{d}(\bar{x}) = d(x)$  for all  $x \in N$ . Numerous results concerning the commutativity of prime and semiprime near-rings admitting suitably constrained derivations and left derivations have been established in the literature (see, for example, [1,2,3]). The main objective of this paper is to investigate the commutativity of quotient near-rings admitting left derivations and multipliers satisfying certain algebraic identities

© ICRAMCS 2026 Proceedings ISSN: 2605-7700

### References

- [1] A. Boua, L. Oukhtite and A. Raji, Jordan ideals and derivations in prime near-rings, *Comment. Math. Univ. Carolin.*, 55(2) (2014), 131-139.
- [2] A. Enguady and A. Boua, On Jordan ideals with left derivations in 3-prime near-rings, *Extracta Math.*, 38(1) (2023), 51-66.
- [3] A. Raji, M. Oukessou and A. Belharrate, Jordan ideals with multiplicative derivations in 3-prime near-rings, *Advanced Mathematical Models and Applications.*, 7(2) (2022), 214-222.