
ABSORBABLE GROUPS

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ABSTRACT

In this study, we provide an innovative concept in group theory that we call it an absorbable group. We discuss some of its characteristics as well as how it relates to well-known ideas such as solvable groups and nilpotent groups. Due to their well-behaved structure and hierarchical breakdown, nilpotent groups are an important class of groups in group theory. If the index $[G: H]$ is a prime number, then G is said to have a prime index. Prime index subgroups are crucial in the context of nilpotent groups. For instance, H must be normal in G if G is a nilpotent group and H is a subgroup with prime index p . Additionally, group solvability and automorphism group structure are impacted by the interaction between nilpotent groups and their prime index subgroups

Keywords Absorbable group · Solvable groups · Nilpotent groups

References

- [1] Amiri, H., Jafarian Amiri, S. M., and Isaacs, I. M. (2009). Sums of Element Orders in Finite Groups. *Communications in Algebra*, 37(9), 2978–2980.
- [2] Morteza Baniasad Azad, Behrooz Khosravi, A criterion for solvability of a finite group by the sum of element orders, *Journal of Algebra*, Volume 516, 2018, Pages 115-124, ISSN 0021-8693,
- [3] W. R. Scott, *Group Theory*, Prentice Hall, Inc., Englewood Cliffs, New Jersey, 1964.

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