

## Congruences Induced by Certain Relations on $Ag^{**}$ -Groupoids

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**Abstract :** We introduce the concept of partially inverse  $Ag^{**}$ -groupoids which is almost parallel to the concepts of E-inversive semigroups and E-inversive E-semigroups. Some characterization problems are provided on partially inverse  $Ag^{**}$ -groupoids. We give necessary and sufficient conditions for a partially inverse  $Ag^{**}$ -subgroupoid E to be a rectangular band. Furthermore, we determine the unitary congruence  $\eta$  on a partially inverse  $Ag^{**}$ -groupoid and show that each partially inverse  $Ag^{**}$ -groupoid possesses an idempotent separating congruence  $\mu$ . We also study anti-separative commutative image of a locally associative  $Ag^{**}$ -groupoid. Finally, we give the concept of completely N-inverse  $Ag^{**}$ -groupoid and characterize a maximum idempotent separating congruence.

**Keywords :**  $Ag^{**}$ -groupoids, congruences, inverses, rectangular band

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