

## HYPER RL-IDEALS IN HYPER RESIDUATED LATTICES

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### Abstract

In this paper, we introduce the notion of a (strong) hyper RL-ideal in hyper residuated lattices and give some properties and characterizations of them. Next, we characterize the (strong) hyper RL-ideals generated by a subset and give some characterizations of the lattice of these hyper RL-ideals. Particularly, we prove that this lattice is algebraic and compact elements are finitely generated hyper RL-ideals, and obtain some isomorphism theorems. Finally, we introduce the notion of nodal hyper RL-ideals in a hyper residuated lattice and investigate their properties. We prove that the set of nodal hyper RL-ideals is a complete Brouwerian lattice and under suitable operations is a Heyting algebra.

**Keywords:** residuated lattice, MV-algebra, BL-algebra, hyper residuated lattice, hyper ideal.

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