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AUTOMATA RINGS

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Abstract: Automaton is a system that spontaneously gives an output from an input. The input may be energy, information, materials, etc. The system works without the intervention of man. Simply automaton (plural: automata or automatons) is a self–operating machine. Its synonym is ROBOT. In this paper, the authors study the theory of finite automata rings. Finite automata rings extend the notion of finite automata and lead to the study of various properties of rings obtained by using finite automata. Also, commutative automata rings, zero-divisors of an automata ring, automata integral domain, sub-automata rings, ideal of an automata ring and related substructures along with automata ring homomorphism are defined. Some results of rings in terms of automata are given in this paper together with their proofs. Besides, some properties of ring homomorphism are derived in terms of automata. Finally, we provide certain examples as well as non-examples of automata rings.

Keywords and Phrases: Automata rings, Sub-automata rings, Ideal of an automata ring, Automata ring homomorphism.

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