Abstract

Title: STUDY OF MORITA THEORY RELATED TO SEMIRINGS, SEMIMODULES, MONOIDS AND ACTS
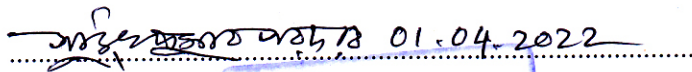
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The thesis is a study of some problems of Morita theory related to semirings, semimodules, monoids and acts. First, the theory of Morita equivalence for semirings with identity is extended to cover a wider range of semirings, namely the semirings with local units. Various concepts such as prime subsemimodule, (right) strongly prime subsemimodule, uniformly strongly prime subsemimodule, locally nilpotent subsemimodule of a bisemimodule related to a Morita context $(R, S, {}_R P_S, {}_S Q_R, \theta, \phi)$ for semirings have been studied in order to prove that structures like prime radical, (right) strongly prime radical, uniformly strongly prime radical, Levitzki radical are preserved under Morita equivalence of semirings with identity. Then we study some topological properties of the prime spectrum of a semimodule P related to a Morita context $(R, S, {}_R P_S, {}_S Q_R, \theta, \phi)$ for semirings.

Concepts like (right) strongly prime sub-biacts, uniformly strongly prime sub-biacts, nil sub-biacts, nilpotent sub-biacts of a biact related to a Morita context $(S, T, {}_S P_T, {}_T Q_S, \theta, \phi)$ for monoids have been introduced using the idea of Morita equivalence of monoids and we obtain one-to-one inclusion preserving correspondence between the set of all (right) strongly prime (uniformly strongly prime, nil, nilpotent) ideals and the set of all (right) strongly prime (resp. uniformly strongly prime, nil, nilpotent) sub-biacts of the pairs (i) S, P (ii) S, Q (iii) T, P (iv) T, Q. Lastly, for a topological monoid S, we consider the category S-Top of topological S-acts and investigate some of its categorical aspects, which might help initiate the study of Morita theory for topological monoids.

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01.04.2022

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