

Wedderburn-Mal'cev Decomposition for some Classes of Topological Rings

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In order to describe the structure of a ring often is necessary to describe its Jacobson radical and the quotient ring relative to the radical. Wedderburn-Mal'cev Theorem for associative finite-dimensional algebras over a field reduces in a better way the study of a ring to the study of its semisimple and radical parts. D.Zelinsky extended Wedderburn's Theorem to compact rings: *Let R be a compact ring of prime characteristic. Then $R = S + J(R)$ is a direct (group) sum for some compact subring S of R .* K. Numakura found necessary and sufficient conditions for decomposability of a compact ring.

The author has proved Wedderburn-Mal'cev Theorem for commutative countably compact rings of prime characteristic. I intend to present recent results concerning Wedderburn-Mal'cev Theorem for countably compact rings and for special classes of linearly compact rings. It will be outlined a new proof of Zelinsky's Theorem.

Moreover, it will be presented an example of a countably compact ring of prime characteristic which does not admit a Wedderburn decomposition. Furthermore, new structure theorems for countably compact rings will be presented.