

Representation theorems for real commutative rings

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In 1940, M.H. Stone gave an axiomatic characterization of rings $C(X, \mathbb{R})$ of continuous real-valued functions on a compact space X , as partially ordered rings. This theorem gave rise to general representations of commutative rings by rings of the type $C(X, \mathbb{R})$, respecting the partial ordering on $C(X, \mathbb{R})$. In 1964, a representation theorem for preordered commutative rings was proved by Krivine (also known as "Kadison-Dubois" Representation Theorem). In 1999 this theorem was considerably extended by Th. Jacobi. His generalization allows interesting applications to positive polynomials and even to optimization.