



Bilinear and Sesquilinear Forms on Jordan
Operator Algebras

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Abstract

In this thesis, we study representation theorems for bilinear forms on Jordan operator algebras. In Chapter 1, we give some definitions and results for different Banach spaces and algebras which we need to use them in our work.

In Chapter 2, we give the definitions of a quasi-linear function and a local quasi-linear function. We then prove that they become a linear function under some conditions. However, we point out that there is a quasi-linear function which is not linear. We study the quasi-linear function and its propositions to define the quasi-bilinear forms which are used in Chapter 3 to drive some representation theorems. Also, we define the pseudo linear function, and show that this definition make sense because there is a pseudo linear function which is not linear.

In chapter 3, we prove some representation theorems for bilinear and sesquilinear forms on Banach spaces, JB^* -triples and JBW^* -triples by using Riesz Representation Theorem on Hilbert spaces. Also, we define an involute of Banach space, and use it to prove other representation theorems. However, we define a quasi-bilinear and a local quasi-bilinear forms, and use it to prove new representation theorems on operator algebras.

In sections 3.2 and 3.3, we present some representation theorems for bilinear and sesquilinear forms on C^* -algebras and von Neumann algebras, and then we define quasi-bilinear forms to drive various representation theorems in this context.