

Dedication

**To
My Father , Mother,
Wife ,and
Big Family,**

Acknowledgements

My gratitude to my supervisor **Prof . Dr . Shawgy Hussein Abd Alla** for his ingenious advise and hard effort and giving me the chance to use his rich library . Special thanks are extended to Sudan University of Sciences and Technology for giving me this chance for Post Graduate . Lastly my heart is full thanks to my brother , sisters my sons ,wife who helped in preparing this thesis and all dear friends for their help .

Abstract

We show that every biorthogonality preserving linear surjection between two dual or compact C^* -algebras or between two von Neumann algebras is automatically continuous . Consequently, every complete (semi-norm on a von Neumann algebra or on a compact C^* -algebra is automatically continuous . We study orthogonality preserving surjective linear maps from a unital C^* -algebra with non-zero socle to a C^* -algebra . We show that an orthogonality-to- p -orthogonality preserving linear bijection from the Lebesgue space to a Banach space is automatically continuous, whenever the von Neumann algebra is a separably acting von Neumann algebra.

الخلاصة

اوضحنا أن أي شامل خطي حافظ على ثنائية التعامدية بين إثنين المزدوج أو جبريات C^* - المتراسة أو بين إثنين جبريات فون نيومان هو مستمر تلقائي . نتيجة لذلك أي شبه -نظيم تام على جبر فون نيومان أو على جبر- C^* المتراس هو مستمر تلقائي . درسنا الرواسم الخطيه الشامله الحافظه على التعامديه من جبري- C^* الواحديه مع قاعده غير- صفريه إلى جبري- C^* . اوضحنا أن الواحد- لواء الخطي الحافظ للتعامديه إلى التعامديه- P من فضاء لبيق إلى فضاء باناخ هو مستمر تلقائي حينما جبر فون نيومان هو جبر فون نيومان التمثيلي المفصل .

The Content

Subject		Page
Dedication		I
Acknowledgements		II
Abstract		III
Abstract (Arabic)		IV
The Content		V
Chapter 1	Compact C^* -algebra and von Neuman algebras with automatic continuity of biorthogonality	1
Section (1-1)	Dual C^* -algebras and Biorthogonality preservers	1
Section (1-2)	C^* -algebras and their projections with Biorthogonality between von Neuman algebras	15
Chapter 2	M-norms on C^* -algebras and Automatic continuity	24
Section (2-1)	Operators on C^* -algebras and M-orthogonality with $O - SMO$ preserving maps	24
Section (2-2)	General with compact C^* -algebra and $O - SMO$ preserving maps	40
Chapter 3	C^* -algebras with non-zero socles and orthogonality preserving	53
Section (3-1)	Introduction	53
Section (3-2)	orthogonality preserving linear mappings	61
Chapter 4	Orthogonality preservers on a non-commutative $L^p(\tau)$ spaces and Automatic continuity	70
Section (4-1)	Orthogonality preservers on factors and p-orthogonality	70
Section (4-2)	vector-valued Function spaces and Disjointness preserving maps	102
List of Symbols		109
Reference		110