

DEDICATION

To
My . . . Mother
My . . . Father
&
My Family

ACKNOWLEDGMENTS

My Thanks due to my supervisor Dr. Shwgy Hussein Abd Alla for his help.

Especial thanks to my teachers.

All thanks to my parents who give me love.

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ABSTRACT

We consider the space of square integrable functions with respect to a measure on a rotation invariant open set. We give necessary and sufficient conditions, in terms of the moments of the measure, for the canonical solution operator of the $\bar{\partial}$ -equation, to be bounded and compact - we give a sufficient condition for subelliptic estimates for the $\bar{\partial}$ -Neumann operator on smoothly bounded pseudoconvex domains on the unitary space.

We also discuss compactness of the $\bar{\partial}$ -canonical solution operator on weighted L^2 spaces. Finally, we show the spectral properties of the $\bar{\partial}$ -canonical solution operator.

ملخص البحث

تم اعتبار فضاء الدوال التكاملية المربعة بالنسبة إلى القياس على فئة مفتوحة لا متغيرة دورانية. تم إعطاء شروطاً كافية وضرورية بدلالة عزومات القياس لأجل مؤثر الحل القانوني لمعادلة - لتكون محدودة ومتراصة. وأيضاً تم إعطاء شرطاً كافياً للتقديرات الناقصية الجزئية لمؤثر نيومان- على مجالات شبه محدبة محدودة ملساء على الفضاء الواحد. أيضاً تم مناقشة تراص مؤثر الحل القانوني على فضاء L^2 المرجح. وأخيراً تم إيضاح خواص الطيف لمؤثر الحل القانون - .

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