SCIENCESPRINGDAY

FACULDADE DE CIÊNCIAS E TECNOLOGIA
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C*- Algebras of Integral Operators

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CEAF CENTRO DE ANÁLISE FUNCIONAL E APLICAÇÕES

Objectives

Given the C*-algebra **B = alg(PSO,S,UG)**, of Cauchy singular integral operators with shifts acting on the unit circle, we want to investigate the **invertibility** and the **Fredholm property** of its elements.

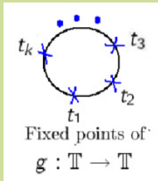

Figure 1: Fixed points

Methodology

The C*-algebra **B = alg(PSO,S,UG)** is an algebra associated with a C*-dynamical system and making convenient decompositions of the **maximal ideal space** of a central C*-subalgebra **Z** of **B**, it is possible associate to each operator **b in B** a family of new operators **b1, b2, …, bk** (related with the fixed points of shifts **g**) belonging to simpler C*-algebras, such that

B is Fredholm (invertible) **iff** **b1, b2,…, bk**, are all **Fredholm** (invertible).

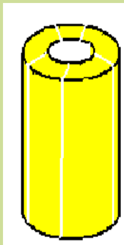

Figure 2: Maximal ideal space

Expected Results

Find new methods to construct **Fredholm** (invertible) **Symbols** for C*-algebras of type **B**, that is, to construct maps Φ that associate to each operator **b in B** a family of square matrices **b1, b2,…, bk**,

$$\Phi : B \to M_{n_1}(\mathbb{C}) \oplus M_{n_2}(\mathbb{C}) \oplus \ldots \oplus M_{n_k}(\mathbb{C})$$

$$b \mapsto (b1, b2, \ldots., bk)$$

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such that **b is Fredholm** (invertible) **iff** all the **determinants** of matrices **b1, b2,…,bk** are nonzero.

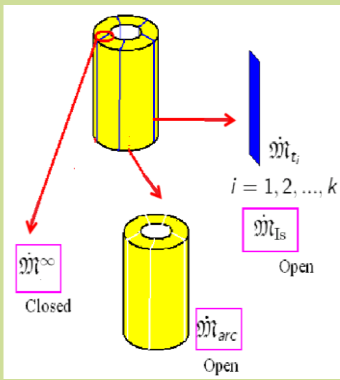

Figure 3: Decomposition which leads to new operators

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