

# SEMINAR

## Grupo de Análise Funcional e Aplicações Functional Analysis and Applications Group

### On multiplier analogues of the algebra $C + H^\infty$ on weighted rearrangement-invariant sequence spaces

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#### Abstract

Let  $X(\mathbb{Z})$  be a reflexive rearrangement-invariant Banach sequence space with nontrivial Boyd indices  $\alpha_X, \beta_X$  and let  $w$  be a symmetric weight in the intersection of the Muckenhoupt classes  $A_{1/\alpha_X}(\mathbb{Z})$  and  $A_{1/\beta_X}(\mathbb{Z})$ . Let  $M_{X(\mathbb{Z},w)}$  denote the collection of all periodic distributions  $a$  generating bounded Laurent operators  $L(a)$  on the space  $X(\mathbb{Z}, w) = \{\varphi : \mathbb{Z} \rightarrow \mathbb{C} : \varphi w \in X(\mathbb{Z})\}$ . We show that  $M_{X(\mathbb{Z},w)}$  is a Banach algebra. Further, we consider the closure of trigonometric polynomials in  $M_{X(\mathbb{Z},w)}$  denoted by  $C_{X(\mathbb{Z},w)}$  and  $H_{X(\mathbb{Z},w)}^{\infty,\pm} = \{a \in M_{X(\mathbb{Z},w)} : \hat{a}(\pm n) = 0 \text{ for } n < 0\}$ . We prove that  $C_{X(\mathbb{Z},w)} + H_{X(\mathbb{Z},w)}^{\infty,\pm}$  are closed subalgebras of  $M_{X(\mathbb{Z},w)}$ . These results provide a natural framework for the analysis of the Fredholm properties of Toeplitz or discrete Wiener-Hopf operators acting on weighted rearrangement-invariant Banach sequence spaces.

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