# $G$-invariant Toeplitz algebras on the Fock space

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## Abstract

In this talk, we study commutative $C^*$-algebras generated by Toeplitz operators acting on the Fock space $F^2(\mathbb{C}^n)$ whose symbols are invariant under translations by a Lagrangian subgroup $G$ of $\mathbb{C}^n$.

The Fock space $F^2(\mathbb{C}^n)$ is defined as the space of holomorphic functions in $L^2(\mathbb{C}^n, \mu)$, where $\mu$ denotes the Gaussian measure on $\mathbb{C}^n$. A Toeplitz operator is defined as the compression of a multiplication operator on $F^2(\mathbb{C}^n)$.

As it turns out, there is an interesting connection between the behavior of algebras generated by Toeplitz operators and the geometry of the underlying domain $\mathbb{C}^n$. In this talk, we explore this connection by studying the commutativity of $C^*$-algebras generated by Toeplitz operators.

We begin by deducing the existence and commutativity of these algebras using some ideas from Quantum Harmonic Analysis in the sense of R. Werner [3]. Afterwards, we diagonalize the generating Toeplitz operators by means of a Bargmann-type transform and describe the Gelfand theory of the resulting algebras, extending some previous results by Esmeral and Vasilevski [2].

This talk is based on joint work with Robert Fulsche [1].

## References

[1] R. Fulsche and M. A. Rodriguez Rodriguez. Commutative $G$-invariant Toeplitz C*-algebras on the Fock space and their Gelfand theory through Quantum Harmonic Analysis. *Accepted in J. Operator Theory. Preprint availabe in arXiv:2307.15632*, 2023.

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[3] R. Werner. Quantum Harmonic Analysis on Phase Space. *J. Math. Phys.*, 25:1404–1411, 1984.