Algebras generated by a finite number of Toeplitz operator associated with certain types of symbols

María del Rosario Ramírez Mora
Cinvestav

October 24, 2022

In this work Toeplitz operators with vertical symbols and acting on the n-poly-Bergman space $\mathcal{A}_n^2(\Pi)$ are studied, where $\Pi \subset \mathbb{C}$ is the upper half-plane. A vertical symbol is a bounded measurable function on Π depending only on $y = \operatorname{Im} z$ and having limit values at $y = 0, +\infty$. We show that the C^*-algebra generated by a finite number of Toeplitz operators with vertical symbols is isomorphic and isometric to the C^*-algebra consisting of all the matrix-valued functions $M(x) \in M_n(\mathbb{C}) \otimes C[0, +\infty]$ such that $M(0)$ and $M(+\infty)$ are scalar matrices.

Also, in this work Toeplitz operators with bounded homogeneous symbols and acting on the n-poly-Bergman space $\mathcal{A}_n^2(\Pi)$ are studied, where $\Pi \subset \mathbb{C}$ is the upper half-plane. Here we consider homogeneous symbols of exponential type $a(z) = e^{N\theta i}$, where N is integer and $\theta = \arg z$. We show that the C^*-algebra generated by a finite number of Toeplitz operators on $\mathcal{A}_n^2(\Pi)$, with homogeneous symbols of exponential type, is isomorphic and isometric to the C^*-algebra consisting of all the matrix-valued functions $M(x) \in M_n(\mathbb{C}) \otimes C[-\infty, +\infty]$ such that $M(-\infty)$ and $M(+\infty)$ are scalar matrices. The C^*-algebra generated by a finite number of Toeplitz operators acting on the n-poly-harmonic Bergman space of Π is also studied.