Mathematics > Functional Analysis

# Localization and Toeplitz Operators on Polyanalytic Fock Spaces

Nelson Faustino

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The well know conjecture of {\it Coburn} [{\it L.A. Coburn, {On the Berezin-Toeplitz calculus}, Proc. Amer. Math. Soc. 129 (2001) 3331-3338.}] proved by {\it Lo} [{\it M-L. Lo, {The Bargmann Transform and Windowed Fourier Transform}, Integr. equ. oper. theory, 27 (2007), 397-412.}] and {\it Englis} [{\it M. Engli$\check{s}$, Toeplitz Operators and Localization Operators, Trans. Am. Math Society 361 (2009) 1039-1052.}] states that any {\it Gabor-Daubechies} operator with window $\psi$ and symbol ${\bf a}(x,\omega)$ quantized on the phase space by a {\it Berezin-Toeplitz} operator with window $\Psi$ and symbol $\sigma(z,\bar{z})$ coincides with a {\it Toeplitz} operator with symbol $D\sigma(z,\bar{z})$ for some polynomial differential operator $D$.

Using the Berezin quantization approach, we will extend the proof for polyanalytic Fock spaces. While the generation is almost mimetic for two-windowed localization operators, the Gabor analysis framework for vector-valued windows will provide a meaningful generalization of this conjecture for {\it true polyanalytic} Fock spaces and moreover for polyanalytic Fock spaces. Further extensions of this conjecture to certain classes of Gel'fand-Shilov spaces will also be considered {\it a-posteriori}.

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