

TOEPLITZ OPERATORS ON POLY-ANALYTIC SPACES VIA TIME-SCALE ANALYSIS

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Abstract. This is a review paper based on the series of our papers devoted to a structure of true-poly-analytic Bergman function spaces over the upper half-plane in the complex plane and to a detailed study of properties of Toeplitz operators with separate symbols acting on them via time-scale analysis approach.

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REFERENCES

- [1] L. D. ABREU, *Sampling and interpolation in Bargman-Fock spaces of polyanalytic functions*, Appl. Comp. Harm. Anal. **29** (3) (2010), 287–302.
- [2] L. D. ABREU, *Super-wavelets versus poly-Bergman spaces*, Integr. Equ. Oper. Theory **73** (2) (2012), 177–193.
- [3] L. D. ABREU, H. G. FEICHTINGER, *Function spaces of polyanalytic functions*, In: “Harmonic and Complex Analysis and its Applications”, A. Vasil’ev (Ed.), Springer, 2014, pp. 1–39.
- [4] S. T. ALI, J.-P. ANTOINE, J.-P. GAZEAU, *Coherent States, Wavelets and Their Generalizations*, Graduate Texts in Contemporary Physics, Springer-Verlag, New York, 2000.
- [5] M. B. BALK, *Polyanalytic Functions*, Mathematical Research **63**, Akademie Verlag, Berlin, 1991.
- [6] H. O. CORDES, *Pseudo-differential operators on a half-line*, J. Math. Mech. **18** (9) (1969), 893–908.
- [7] Ž. ČUČKOVIĆ, T. LE, *Toeplitz operators on Bergman spaces of polyanalytic functions*, Bull. London Math. Soc. **44** (5) (2012), 961–973.
- [8] A. S. ELMABROK, O. HUTNÍK, *Induced representations of the affine group and intertwining operators I: analytical approach*, J. Phys. A: Math. Theor. **45** (24) (2012), art. no. 244017.
- [9] S. GRUDSKY, A. KARAPETYANS, N. VASILEVSKI, *Dynamics of properties of Toeplitz operators on the upper half-plane: parabolic case*, J. Operator Theory **52** (1) (2004), 185–214.
- [10] C. HERRERA YAÑEZ, E. A. MAXIMENKO, N. L. VASILEVSKI, *Vertical Toeplitz operators on the upper half-plane and very slowly oscillating functions*, Integr. Equ. Oper. Theory **77** (2) (2013), 149–166.
- [11] O. HUTNÍK, *A note on wavelet subspaces*, Monatsh. Math. **160** (1) (2010), 59–72.
- [12] O. HUTNÍK, *On boundedness of Calderón-Toeplitz operators*, Integr. Equ. Oper. Theory **70** (4) (2011), 583–600.
- [13] O. HUTNÍK, *Wavelets from Laguerre polynomials and Toeplitz-type operators*, Integr. Equ. Oper. Theory **71** (3) (2011), 357–388.
- [14] M. HUTNÍKOVÁ, O. HUTNÍK, *Affine coherent states and Toeplitz operators*, J. Phys. A: Math. Theor. **45** (24) (2012), art. no. 244021.
- [15] T. PAUL, *Estats quantiques réalisés par des fonctions analytiques dans le demi-plan*, Thèse (1984), L’Université Pierre et Marie Curie, Paris.
- [16] N. L. VASILEVSKI, *On the structure of Bergman and poly-Bergman spaces*, Integr. Equ. Oper. Theory **33** (1999), 471–488.
- [17] N. L. VASILEVSKI, *Poly-Fock spaces*, In: “Differential operators and related topics, Vol. I (Odessa, 1997)”, Operator Theory: Advances and Applications **117**, Birkhäuser, Basel, 2000, pp. 371–386.

- [18] N. L. VASILEVSKI, *Commutative Algebras of Toeplitz Operators on the Bergman Space*, Series: Operator Theory: Advances and Applications **185**, Birkhäuser, Basel, 2008.