

VOLTERRA COMPOSITION OPERATORS FROM WEIGHTED-TYPE SPACES TO BLOCH-TYPE SPACES AND MIXED NORM SPACES

XIANGLING ZHU

Abstract. The boundedness and compactness of the Volterra composition operator from a class of weighted-type spaces to Bloch-type spaces and mixed norm spaces on the unit ball are completely characterized in this paper.

Mathematics subject classification (2010): Primary 47B38; secondary 46E15.

Keywords and phrases: Volterra composition operator, weighted-type space, Bloch-type space, mixed norm space, unit ball.

REFERENCES

- [1] K. AVETISYAN AND S. STEVIĆ, *Extended Cesàro operators between different Hardy spaces*, Appl. Math. Comput., **207** (2009), 346–350.
- [2] D. C. CHANG, S. LI AND S. STEVIĆ, *On some integral operators on the polydisk and the unit ball*, Taiwanese J. Math., **11** (2007), 1251–1286.
- [3] C. C. COWEN AND B. D. MACCLUER, *Composition Operators on Spaces of Analytic Functions*, Studies in Advanced Math., CRC Press, Boca Raton, 1995.
- [4] Z. HU, *Extended Cesàro operators on mixed norm spaces*, Proc. Amer. Math. Soc., **131** (2003), 2171–2179.
- [5] Z. HU, *Extended Cesàro operators on the Bloch space in the unit ball of \mathbb{C}^n* , Acta Math. Sci. Ser. B Engl. Ed., **23** (2003), 561–566.
- [6] Z. HU, *Extended Cesàro operators on Bergman spaces*, J. Math. Anal. Appl., **296** (2004), 435–454.
- [7] S. KRANTZ AND S. STEVIĆ, *On the iterated logarithmic Bloch space on the unit ball*, Nonlinear Anal. TMA, **71** (2009), 1772–1795.
- [8] S. LI, *Riemann-Stieltjes operators from $F(p,q,s)$ to Bloch space on the unit ball*, J. Inequal. Appl. (2006), Vol. **2006**, Article ID 27874, 14 pages.
- [9] S. LI, *Volterra composition operators between weighted Bergman space and Bloch type spaces*, J. Korea Math. Soc., **45** (2008), 229–248.
- [10] S. LI AND S. STEVIĆ, *Riemann-Stieltjes type integral operators on the unit ball in \mathbb{C}^n* , Complex Variables Elliptic Equations, **52** (2007), 495–517.
- [11] S. LI AND S. STEVIĆ, *Integral type operators from mixed-norm spaces to α -Bloch spaces*, Integral Transform Spec. Funct., **18** (2007), 485–493.
- [12] S. LI AND S. STEVIĆ, *Riemann-Stieltjes operators on Hardy spaces in the unit ball of \mathbb{C}^n* , Bull. Belg. Math. Soc. Simon Stevin, **14** (2007), 621–628.
- [13] S. LI AND S. STEVIĆ, *Riemann-Stieltjes operators on weighted Bergman spaces in the unit ball of \mathbb{C}^n* , Bull. Belg. Math. Soc. Simon Stevin, **15** (2008), 677–686.
- [14] S. LI AND S. STEVIĆ, *Riemann-Stieltjes operators between mixed norm spaces*, Indian J. Math., **50** (2008), 177–188.
- [15] S. LI AND S. STEVIĆ, *Compactness of Riemann-Stieltjes operators between $F(p,q,s)$ and α -Bloch spaces*, Publ. Math. Debrecen, **72**, 1–2 (2008), 111–128.
- [16] S. LI AND S. STEVIĆ, *Products of composition and integral type operators from H^∞ to the Bloch space*, Complex Variables Elliptic Equations, **53** (2008), 463–474.
- [17] S. LI AND S. STEVIĆ, *Products of Volterra type operator and composition operator from H^∞ and Bloch spaces to the Zygmund space*, J. Math. Anal. Appl., **345** (2008), 40–52.

- [18] S. LI AND S. STEVIĆ, *Products of integral-type operators and composition operators between Bloch-type spaces*, J. Math. Anal. Appl., **349** (2009), 596–610.
- [19] S. LI AND S. STEVIĆ, *Cesàro type operators on some spaces of analytic functions on the unit ball*, Appl. Math. Comput., **208** (2009), 378–388.
- [20] S. LI AND S. STEVIĆ, *Integral-type operators from Bloch-type spaces to Zygmund-type spaces*, Appl. Math. Comput., **215** (2009), 464–473.
- [21] S. LI AND S. STEVIĆ, *On an integral-type operator from iterated logarithmic Bloch spaces into Bloch-type spaces*, Appl. Math. Comput., **215** (2009), 3106–3115.
- [22] K. MADIGAN AND A. MATHESON, *Compact composition operators on the Bloch space*, Trans. Amer. Math. Soc., **347**, 7 (1995), 2679–2687.
- [23] A. L. SHIELDS AND D. L. WILLIAMS, *Bounded projections, duality, and multipliers in spaces of analytic functions*, Trans. Amer. Math. Soc., **162** (1971), 287–302.
- [24] S. STEVIĆ, *On an integral operator on the unit ball in \mathbb{C}^n* , J. Inequal. Appl., **2005** (2005), 81–88.
- [25] S. STEVIĆ, *On a new operator from H^∞ to the Bloch-type space on the unit ball*, Util. Math., **77** (2008), 257–263.
- [26] S. STEVIĆ, *On a new integral-type operator from the weighted Bergman space to the Bloch-type space on the unit ball*, Discrete Dyn. Nat. Soc., Vol. **2008**, Article ID 154263 (2008), 14 pages.
- [27] S. STEVIĆ, *On a new operator from the logarithmic Bloch space to the Bloch-type space on the unit ball*, Appl. Math. Comput., **206** (2008), 313–320.
- [28] S. STEVIĆ, *On a new integral-type operator from the Bloch space to Bloch-type spaces on the unit ball*, J. Math. Anal. Appl., **354** (2009), 426–434.
- [29] S. STEVIĆ, *On an integral operator from the Zygmund space to the Bloch-type space on the unit ball*, Glasg. J. Math., **51** (2009), 275–287.
- [30] S. STEVIĆ, *Products of integral type operators and composition operators from the mixed norm space to Bloch-type spaces*, Sib. Math. J., **50** (2009), 726–736.
- [31] X. TANG, *Extended Cesàro operators between Bloch-type spaces in the unit ball of \mathbb{C}^n* , J. Math. Anal. Appl., **326** (2007), 1199–1211.
- [32] J. XIAO, *Riemann-Stieltjes operators on weighted Bloch and Bergman spaces of the unit ball*, J. London. Math. Soc., **70** (2004), 199–214.
- [33] W. YANG, *On an integral-type operator between Bloch-type spaces*, Appl. Math. Comput., **215** (2009), 954–960.
- [34] K. ZHU, *Spaces of Holomorphic Functions in the Unit Ball*, Springer Verlag, New York, 2005.
- [35] X. ZHU, *Generalized composition operators and Volterra composition operators on Bloch spaces in the unit ball*, Complex Variables and Elliptic Equations, **54** (2009), 95–102.
- [36] X. ZHU, *Volterra composition operators on logarithmic Bloch spaces*, Banach J. Math. Anal., **3** (2009), 122–130.
- [37] X. ZHU, *Extended Cesàro operators from H^∞ to Zygmund type spaces in the unit ball*, J. Comput. Anal. Appl., **11** (2009), 356–363.
- [38] X. ZHU, *Integral-type operators from iterated logarithmic Bloch spaces to Zygmund-type spaces*, Appl. Math. Comput., **215** (2009), 1170–1175.
- [39] X. ZHU, *Volterra composition operators from generalized weighted Bergman spaces to μ -Bloch type spaces*, J. Funct. Space Appl., **7** (2009), 225–240.