

WEIGHTED COMPOSITION OPERATORS FROM WEIGHTED-TYPE SPACES TO ZYGMUND-TYPE SPACES

XIANGLING ZHU

Abstract. Some criteria for the boundedness and the compactness of weighted composition operators from weighted-type spaces into Zygmund-type spaces are given in this paper. Moreover, we give some estimates for the essential norm of these operators.

Mathematics subject classification (2010): 30H99, 47B33.

Keywords and phrases: Weighted-type space, Zygmund-type space, essential norm, weighted composition operator.

REFERENCES

- [1] B. CHOE, H. KOO AND W. SMITH, *Composition operators on small spaces*, Integral Equations Oper. Theory **56** (2006), 357–380.
- [2] K. ESMAELI AND M. M. LINDSTRÖM, *Weighted composition operators between Zygmund type spaces and their essential norms*, Integral Equations Oper. Theory **75** (2013), 473–490.
- [3] O. HYVÄRINEN, M. KEMPPAINEN, M. LINDSTRÖM, A. RAUTIO AND E. SAUKKO, *The essential norm of weighted composition operators on weighted Banach spaces of analytic functions*, Integral Equations Oper. Theory **72** (2012), 151–157.
- [4] O. HYVÄRINEN AND M. LINDSTRÖM, *Estimates of essential norm of weighted composition operators between Bloch-type spaces*, J. Math. Anal. Appl. **393** (2012), 38–44.
- [5] S. LI AND S. STEVIĆ, *Volterra type operators on Zygmund spaces*, J. Ineq. Appl. Volume 2007, Article ID 32124, (2007), 10 pages.
- [6] S. LI AND S. STEVIĆ, *Weighted composition operators from α -Bloch space to H^∞ on the polydisk*, Numer. Funct. Anal. Optim. **28** (7) (2007), 911–925.
- [7] S. LI AND S. STEVIĆ, *Weighted composition operators from Bergman-type spaces into Bloch spaces*, Proc. Indian Acad. Sci. Math. Sci. **117** (3) (2007), 371–385.
- [8] S. LI AND S. STEVIĆ, *Weighted composition operators from H^∞ to the Bloch space on the polydisc*, Abstr. Appl. Anal. Vol. 2007, Article ID 48478, (2007), 12 pages.
- [9] S. LI AND S. STEVIĆ, *Generalized composition operators on Zygmund spaces and Bloch type spaces*, J. Math. Anal. Appl. **338** (2008), 1282–1295.
- [10] S. LI AND S. STEVIĆ, *Weighted composition operators from Zygmund spaces into Bloch spaces*, Appl. Math. Comput. **206** (2008), 825–831.
- [11] S. LI AND S. STEVIĆ, *Products of composition and differentiation operators from Zygmund spaces to Bloch spaces and Bers spaces*, Appl. Math. Comput. **217** (2010), 3144–3154.
- [12] B. MACCLUER AND R. ZHAO, *Essential norm of weighted composition operators between Bloch-type spaces*, Rocky Mountain J. Math. **33** (2003), 1437–1458.
- [13] K. MADIGAN AND A. MATHESON, *Compact composition operators on the Bloch space*, Trans. Amer. Math. Soc. **347** (1995), 2679–2687.
- [14] A. MONTES-RODRIGUEZ, *The essential norm of composition operators on the Bloch space*, Pacific J. Math. **188** (1999), 339–351.
- [15] A. MONTES-RODRIGUEZ, *Weighted composition operators on weighted Banach spaces of analytic functions*, J. London Math. Soc. **61** (2000), 872–884.
- [16] S. OHNO, K. STROETHOFF AND R. ZHAO, *Weighted composition operators between Bloch-type spaces*, Rocky Mountain J. Math. **33** (2003), 191–215.

- [17] S. STEVIĆ, *Weighted composition operators between mixed norm spaces and H^∞_α spaces in the unit ball*, J. Ineq. Appl. Vol. 2007, Article ID 28629, (2007), 9 pages.
- [18] S. STEVIĆ, *Essential norms of weighted composition operators from the α -Bloch space to a weighted-type space on the unit ball*, Abstr. Appl. Anal. Vol. 2008, Article ID 279691, (2008), 11 pages.
- [19] S. STEVIĆ, *Norm and essential norm of composition followed by differentiation from α -Bloch spaces to H^∞_μ* , Appl. Math. Comput. **207** (2009), 225–229.
- [20] 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.
- [21] S. STEVIĆ, *On an integral-type operator from logarithmic Bloch-type and mixed-norm spaces to Bloch-type spaces*, Nonlinear Anal. TMA **71** (2009), 6323–6342.
- [22] S. STEVIĆ, *Weighted composition operators from weighted Bergman spaces to weighted-type spaces on the unit ball*, Appl. Math. Comput. **212** (2009), 499–504.
- [23] S. STEVIĆ, *Weighted differentiation composition operators from mixed-norm spaces to weighted-type spaces*, Appl. Math. Comput. **211** (2009), 222–233.
- [24] S. STEVIĆ, *On operator P_ϕ^g from the logarithmic Bloch-type space to the mixed-norm space on unit ball*, Appl. Math. Comput. **215** (2010), 4248–4255.
- [25] S. STEVIĆ, *Weighted differentiation composition operators from H^∞ and Bloch spaces to n th weighted-type spaces on the unit disk*, Appl. Math. Comput. **216** (2010), 3634–3641.
- [26] S. STEVIĆ AND A. K. SHARMA, *Weighted composition operators between growth spaces of the upper half-plane*, Util. Math. **84** (2011), 265–272.
- [27] S. STEVIĆ AND A. K. SHARMA, *Weighted composition operators between Hardy and growth spaces on the upper half-plane*, Appl. Math. Comput. **217** (2011), 4928–4934.
- [28] S. STEVIĆ, Z. ZHOU AND R. CHEN, *Weighted composition operators between Bloch type spaces in the polydisc*, Sb. Math. **201** (1–2) (2010), 289–319.
- [29] S. STEVIĆ AND S. I. UEKI, *Integral-type operators acting between weighted-type spaces on the unit ball*, Appl. Math. Comput. **215** (2009), 2464–2471.
- [30] M. TJANI, *Compact composition operators on some Möbius invariant Banach spaces*, PhD dissertation, Michigan State University, 1996.
- [31] H. WULAN, D. ZHENG AND K. ZHU, *Compact composition operators on BMOA and the Bloch space*, Proc. Amer. Math. Soc. **137** (2009), 3861–3868.
- [32] W. YANG, *Weighted composition operators from Bloch-type spaces to weighted-type spaces*, Ars Combin. **92** (2009), 415–423.
- [33] Y. YU AND Y. LIU, *Weighted differentiation composition operators from H^∞ to Zygmund spaces*, Integ. Trans. Spec. Funct. **22** (2011), 507–520.
- [34] R. ZHAO, *Essential norms of composition operators between Bloch type spaces*, Proc. Amer. Math. Soc. **138** (2010), 2537–2546.
- [35] K. ZHU, *Operator Theory in Function Spaces*, Marcel Dekker, New York and Basel, 1990.
- [36] X. ZHU, *Generalized weighted composition operators from Bloch spaces into Bers-type spaces*, Filomat **26** (2012), 1163–1169.
- [37] X. ZHU, *Generalized weighted composition operators from Bers-type spaces to Bloch-type spaces*, Math. Ineq. Appl. **17** (2014), 187–195.