

GENERALIZED WEIGHTED COMPOSITION OPERATORS FROM WEIGHTED BERGMAN SPACES INTO ZYGMUND–TYPE SPACES

XIANGLING ZHU

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

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REFERENCES

- [1] B. CHOE, H. KOO AND W. SMITH, *Composition operators on small spaces*, Integral Equations Oper. Theory, **56** (2006), 357–380.
- [2] F. COLONNA AND M. TJANI, *Essential norms of weighted composition operators from Hilbert function spaces into the Zygmund-type spaces*, Mediterr. J. Math., **12** (2015), 1357–1375.
- [3] C. COWEN AND B. MACCLUER, *Composition Operators on Spaces of Analytic Functions*, CRC Press, Boca Raton, FL, 1995.
- [4] K. ESMAELI AND M. LINDSTRÖM, *Weighted composition operators between Zygmund type spaces and their essential norms*, Integral Equations Oper. Theory, **75** (2013), 473–490.
- [5] R. HIBSCHWEILER AND N. PORTNOY, *Composition followed by differentiation between Bergman and Hardy spaces*, Rocky Mountain J. Math., **35** (2005), 843–855.
- [6] Q. HU, Y. SHI, Y. SHI AND X. ZHU, *Essential norm of generalized weighted composition operators from the Bloch space into the Zygmund space*, J. Ineq. Appl., Vol. 2016, Article No. 123, (2016), 16 pages.
- [7] 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.
- [8] 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.
- [9] H. LI AND X. FU, *A new characterization of generalized weighted composition operators from the Bloch space into the Zygmund space*, J. Funct. Spaces Appl., Volume 2013, Article ID 925901, 12 pages.
- [10] S. LI AND S. STEVIĆ, *Volterra type operators on Zygmund spaces*, J. Ineq. Appl., Volume 2007, Article ID 32124, (2007), 10 pages.
- [11] S. LI AND S. STEVIĆ, *Composition followed by differentiation between Bloch type spaces*, J. Comput. Anal. Appl., **9** (2007), 195–205.
- [12] S. LI AND S. STEVIĆ, *Composition followed by differentiation from mixed-norm spaces to α -Bloch spaces*, Sb. Math., **199** (12) (2008), 1847–1857.
- [13] S. LI AND S. STEVIĆ, *Generalized composition operators on Zygmund spaces and Bloch type spaces*, J. Math. Anal. Appl., **338** (2008), 1282–1295.
- [14] S. LI AND S. STEVIĆ, *Weighted composition operators from Zygmund spaces into Bloch spaces*, Appl. Math. Comput., **206** (2008), 825–831.
- [15] S. LI AND S. STEVIĆ, *Composition followed by differentiation between H^∞ and α -Bloch spaces*, Houston J. Math., **35** (2009), 327–340.

- [16] 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.
- [17] S. LI AND S. STEVIĆ, *Generalized weighted composition operators from α -Bloch spaces into weighted-type spaces*, J. Ineq. Appl., Vol. 2015, Article No. 265, (2015), 12 pages.
- [18] Y. LIANG AND Z. ZHOU, *Essential norm of the product of differentiation and composition operators between Bloch-type space*, Arch. Math., **100** (2013), 347–360.
- [19] A. MONTES-RODRIGUEZ, *Weighted composition operators on weighted Banach spaces of analytic functions*, J. London Math. Soc., **61** (2000), 872–884.
- [20] 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.
- [21] S. STEVIĆ, *Products of composition and differentiation operators on the weighted Bergman space*, Bull. Belg. Math. Soc. Simon Stevin, **16** (2009), 623–635.
- [22] S. STEVIĆ, *Weighted differentiation composition operators from mixed-norm spaces to weighted-type spaces*, Appl. Math. Comput., **211** (2009), 222–233.
- [23] S. STEVIĆ, *Weighted differentiation composition operators from mixed-norm spaces to the n th weighted-type space on the unit disk*, Abstr. Appl. Anal., Vol. 2010, Article ID 246287, (2010), 15 pages.
- [24] 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.
- [25] Y. WU AND H. WULAN, *Products of differentiation and composition operators on the Bloch space*, Collet. Math., **63** (2012), 93–107.
- [26] W. YANG AND X. ZHU, *Generalized weighted composition operators from area Nevanlinna spaces to Bloch-type spaces*, Taiwanese J. Math., **16** (2012), 869–883.
- [27] Y. YU AND Y. LIU, *Weighted differentiation composition operators from H^{∞} to Zygmund spaces*, Integral Trans. Spec. Funct., **22** (2011), 507–520.
- [28] K. ZHU, *Operator Theory in Function Spaces*, Amer. Math. Soc., second edition, 2007.
- [29] X. ZHU, *Products of differentiation, composition and multiplication from Bergman type spaces to Bers type space*, Integ. Tran. Spec. Funct., **18** (2007), 223–231.
- [30] X. ZHU, *Generalized weighted composition operators on weighted Bergman spaces*, Numer. Funct. Anal. Opt., **30** (2009), 881–893.
- [31] X. ZHU, *Generalized weighted composition operators on Bloch-type spaces*, J. Ineq. Appl., **2015** (2015), 59–68.
- [32] X. ZHU, *Essential norm of generalized weighted composition operators on Bloch-type spaces*, Appl. Math. Comput., **274** (2016), 133–142.