

ESTIMATES OF ESSENTIAL NORM OF THE LI-STEVIĆ INTEGRAL TYPE OPERATOR BETWEEN ZYGMUND TYPE SPACES

AMIR H. SANATPOUR

Abstract. For an analytic selfmap φ of the open unit disc \mathbb{D} and an analytic function g on \mathbb{D} , the Li-Stević integral type operator C_{φ}^g is given by

$$(C_{\varphi}^g f)(z) = \int_0^z f'(\varphi(\xi))g(\xi)d\xi.$$

We give essential norm estimates of the operator between Zygmund type spaces. We also apply our approach in the case of Bloch type spaces.

Mathematics subject classification (2010): 47B38, 30H30.

Keywords and phrases: Essential norm estimate, Li-Stević integral type operator, Zygmund type space, Bloch type space, weighted-type space.

REFERENCES

- [1] P. L. DUREN, *Theory of H^p Spaces*, Pure and Applied Mathematics **38**, Academic Press, San Diego, 1970.
- [2] K. ESMAELI AND M. LINDSTRÖM, *Weighted composition operators between Zygmund type spaces and their essential norms*, Integr. Equ. 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*, Integr. Equ. Oper. Theory **72** (2012), 151–157.
- [4] O. HYVÄRINEN AND M. LINDSTRÖM, *Estimates of essential norms 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. Inequal. Appl. (2007), Art. ID 32124, 10 pp.
- [6] S. LI AND S. STEVIĆ, *Generalized composition operators on Zygmund spaces and Bloch type spaces*, J. Math. Anal. Appl. **338** (2008), 1282–1295.
- [7] S. LI AND S. STEVIĆ, *Products of Volterra type operator and composition operator from H^{∞} and Bloch spaces to Zygmund spaces*, J. Math. Anal. Appl. **345** (2008), 40–52.
- [8] S. LI AND S. STEVIĆ, *Weighted composition operators from Zygmund spaces into Bloch spaces*, Appl. Math. Comput. **206** (2008), 825–831.
- [9] S. LI AND S. STEVIĆ, *Integral-type operators from Bloch-type spaces to Zygmund-type spaces*, Appl. Math. Comput. **215** (2009), 464–473.
- [10] S. LI AND S. STEVIĆ, *On an integral-type operator from ω -Bloch spaces to μ -Zygmund spaces*, Appl. Math. Comput. **215** (2010), 4385–4391.
- [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] M. LINDSTRÖM AND A. H. SANATPOUR, *Derivative-free characterizations of compact generalized composition operators between Zygmund type spaces*, Bull. Aust. Math. Soc. **81** (2010), 398–408.
- [13] B. MACCLUER AND R. ZHAO, *Essential norms of weighted composition operators between Bloch-type spaces*, Rocky Mountain J. Math. **33** (2003), 1437–1458.
- [14] J. S. MANHAS AND R. ZHAO, *New estimates of essential norms of weighted composition operators between Bloch type spaces*, J. Math. Anal. Appl. **389** (2012), 32–47.

- [15] A. MONTES-RODRÍGUEZ, *Weighted composition operators on weighted Banach spaces of analytic functions*, J. Lond. 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] A. H. SANATPOUR AND M. HASSANLOU, *Essential norms of weighted composition operators between Zygmund-type spaces and Bloch-type spaces*, Turkish J. Math. **38** (2014), 872–882.
- [18] S. STEVIĆ, *On an integral operator from the Zygmund space to the Bloch-type space on the unit ball*, Glasg. Math. J. **51** (2009), 275–287.
- [19] S. STEVIĆ, *Integral-type operators from a mixed norm space to a Bloch-type space on the unit ball*, Sib. Math. J. **50** (2009), 1098–1105.
- [20] S. STEVIĆ, *On an integral-type operator from Zygmund-type spaces to mixed-norm spaces on the unit ball*, Abstr. Appl. Anal. (2010), Art. ID 198608, 7 pp.
- [21] S. UEKI, *On the Li-Stević integral type operators from weighted Bergman spaces into β -Zygmund spaces*, Integr. Equ. Oper. Theory **74** (2012), 137–150.
- [22] W. YANG, Y. LUO AND X. ZHU, *Differences of generalized composition operators between Bloch type spaces*, Math. Inequal. Appl. **17** (2014), 977–987.
- [23] X. ZHU, *A new characterization of the generalized weighted composition operator from H^∞ into the Zygmund space*, Math. Inequal. Appl. **18** (2015), 1135–1142.