

Weighted Composition Operators Between Besov Spaces

SANJAY KUMAR, KANWAR JATINDER SINGH

Department of Mathematics, University of Jammu, Jammu-180 006, India
sks_jam@yahoo.co.in, kjeetindriya@yahoo.co.in

Presented by Manuel González

Received March 10, 2008

Abstract: In this paper, we study the boundedness, the compactness and the essential norm of weighted composition operators between Besov spaces. We also find estimates for the essential norm of weighted composition operators between S^p spaces.

Key words: Besov spaces, Carleson measure, essential norm, S^p spaces, weighted composition operators.

AMS Subject Class. (2000): 47B33, 46E30, 47B07, 46B70.

REFERENCES

- [1] J. ARAZY, S. D. FISHER, J. PEETRE, Möbius invariant function spaces, *J. Reine Angew. Math.* **363** (1985), 110–145.
- [2] M. D. CONTRERAS, A. G. HERNÁNDEZ-DÍAZ, Weighted composition operators on Hardy spaces, *J. Math. Anal. Appl.* **263** (2001), 224–233.
- [3] M. D. CONTRERAS, A. G. HERNÁNDEZ-DÍAZ, Weighted composition operators on spaces of functions with derivative in the Hardy spaces, *J. Operator Theory* **52**(1) (2004), 173–184.
- [4] C. C. COWEN, B. D. MACCLUER, “Composition Operators on Spaces of Analytic Functions”, CRC Press, Boca Raton, FL, 1995.
- [5] Ž. ČUČKOVIĆ, R. ZHAO, Weighted composition operators on the Bergman spaces, *J. London Math. Soc.* **70**(2) (2004), 499–511.
- [6] Ž. ČUČKOVIĆ, R. ZHAO, Weighted composition operators between different weighted Bergman spaces and different Hardy spaces, *Illinois J. Math.* **51** (2007), 479–498.
- [7] R. J. FLEMING, J. E. JAMISON, “Isometries on Banach Spaces”, Chapman & Hall/CRC, Boca Raton, FL, 2003.
- [8] P. R. HALMOS, “Measure Theory”, Grad. Texts in Math., 18, Springer-Verlag, New York, 1974.
- [9] R. KUMAR, J. R. PARTINGTON, Weighted composition operators on Hardy and Bergman spaces, in “Recent Advances in Operator Theory, Operator Algebras, and their Applications”, Oper. Theory Adv. Appl., 153, Birkhäuser, Basel, 2005, 157–167.

- [10] S. KUMAR, K. J. SINGH, Weighted composition operators on weighted Bergman spaces, *Extracta Math.* **22** (3) (2007), 245–256.
- [11] B. D. MACCLUER, Composition operators on S^p , *Houston J. Math.* **13** (1987), 245–254.
- [12] B. D. MACCLUER, J. H. SHAPIRO, Angular derivatives and compact composition operators on the Hardy and Bergman spaces, *Canad. J. Math.* **38** (1986), 878–906.
- [13] B. D. MACCLUER, R. ZHAO, Essential norms of composition operators between Bloch type spaces, *Rocky Mountain J. Math.* **33** (2003), 1437–1458.
- [14] A. MONTES-RODRÍGUEZ, The essential norm of a composition operator on Bloch spaces, *Pacific J. Math.* **188** no. 2 (1999), 339–351.
- [15] A. MONTES-RODRÍGUEZ, Weighted composition operators on weighted Banach spaces of analytic functions, *J. London Math. Soc.* **61** (2000), 872–884.
- [16] S. OHNO, R. ZHAO, Weighted composition operators on the Bloch spaces, *Bull. Austral. Math. Soc.* **63** (2001), 177–185.
- [17] S. OHNO, K. STROETHOFF, R. ZHAO, Weighted composition operators between Bloch-type spaces, *Rocky Mountain J. Math.* **33** (2003), 191–215.
- [18] R. ROAN, Composition operators on the spaces of functions with H^p -derivatives, *Houston J. Math.* **4** (1978), 423–438.
- [19] J. H. SHAPIRO, The essential norm of a composition operator, *Ann. of Math.* **125** (1987), 375–404.
- [20] J. H. SHAPIRO, “Composition Operators and Classical Function Theory”, Springer-Verlag, New York, 1993.
- [21] J. H. SHAPIRO, W. SMITH, Hardy spaces that support no compact composition operators, *J. Funct. Anal.* **205** (1) (2003), 62–89.
- [22] M. TJANI, Compact composition operators on Besov spaces, *Trans. Amer. Math. Soc.* **355** (11) (2003), 4683–4698.
- [23] R. ZHAO, Composition operators from Bloch type spaces to Hardy and Besov spaces, *J. Math. Anal. Appl.* **233** (1999), 749–766.
- [24] K. ZHU, “Operator Theory in Function Spaces”, Monographs and Textbooks in Pure and Applied Mathematics, 139, Marcel Dekker, Inc., New York, 1990.
- [25] K. ZHU, Duality of Bloch spaces and norm convergence of Taylor series, *Michigan Math. J.* **38** (1991), 89–101.
- [26] N. ZORBOSKA, Composition operators on weighted Dirichlet spaces, *Proc. Amer. Math. Soc.* **103** (1998), 2013–2023.