

SOME SHARP INEQUALITIES ON MIXED-NORM SPACES ON THE UNIT BALL

STEVO STEVIĆ

Abstract. We give some sharp inequalities on the mixed-norm spaces of holomorphic and harmonic functions on the unit balls in \mathbb{C}^n and \mathbb{R}^n respectively. Several interesting corollaries and applications of the inequalities are also given.

Mathematics subject classification (2010): Primary 32A36, 31B05; Secondary 26D15.

Keywords and phrases: Mixed-norm space, unit ball, holomorphic functions, harmonic functions, Čebyšev inequality.

REFERENCES

- [1] K. AVETISYAN AND S. STEVIĆ, *Extended Cesàro operators between different Hardy spaces*, Appl. Math. Comput. **207** (2009), 346–350.
- [2] S. AXLER, P. BOURDON AND W. RAMEY, *Harmonic Function Theory*, Graduate Text in Mathematics 137, Springer, New York, 2001.
- [3] Z. HU, *Extended Cesàro operators on mixed-norm spaces*, Proc. Amer. Math. Soc. **131** (7) (2003), 2171–2179.
- [4] S. KRANTZ AND S. STEVIĆ, *On the iterated logarithmic Bloch space on the unit ball*, Nonlinear Anal. TMA **71** (2009), 1772–1795.
- [5] S. LI AND S. STEVIĆ, *Integral type operators from mixed-norm spaces to α -Bloch spaces*, Integral Transforms Spec. Funct. **18** (7) (2007), 485–493.
- [6] S. LI AND S. STEVIĆ, *Composition followed by differentiation from mixed-norm spaces to α -Bloch spaces*, Sb. Math **199** (12) (2008), 1847–1857.
- [7] S. LI AND S. STEVIĆ, *Riemann-Stieltjes operators between different weighted Bergman spaces*, Bull. Belg. Math. Soc. Simon Stevin **15** (4) (2008), 677–686.
- [8] D. S. MITRINOVİĆ, *Analytics Inequalities*, New York, Berlin, Springer-Verleg, 1970.
- [9] W. RUDIN, *Function Theory in the Unit Ball of \mathbb{C}^n* , Springer-Verlag, New York, 1980.
- [10] 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.
- [11] S. STEVIĆ, *An equivalent norm on BMO spaces*, Acta Sci. Math. **66** (2000), 553–564.
- [12] S. STEVIĆ, *On harmonic Hardy and Bergman spaces*, J. Math. Soc. Japan **54** No. 4 (2002), 983–996.
- [13] S. STEVIĆ, *On harmonic Hardy spaces and area integrals*, J. Math. Soc. Japan **56** No. 2, (2004), 339–347.
- [14] S. STEVIĆ, *On harmonic function spaces*, J. Math. Soc. Japan **57** (3) (2005), 781–802.
- [15] S. STEVIĆ, *Area type inequalities and integral means of harmonic functions on the unit ball*, J. Math. Soc. Japan **59** (2) (2007), 583–601.
- [16] 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 p.
- [17] S. STEVIĆ, *Integral-type operators from a mixed norm space to a Bloch-type space on the unit ball*, Siberian Math. J. **50** (6) (2009), 1098–1105.
- [18] 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.
- [19] 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.

- [20] S. STEVIĆ, *Products of composition and differentiation operators on the weighted Bergman space*, Bull. Belg. Math. Soc. Simon Stevin **16** (2009), 623–635.
- [21] S. STEVIĆ, *Weighted differentiation composition operators from mixed-norm spaces to weighted-type spaces*, Appl. Math. Comput. **211** (2009), 222–233.
- [22] S. STEVIĆ, *On an integral operator between Bloch-type spaces on the unit ball*, Bull. Sci. Math. **134** (2010), 329–339.
- [23] S. STEVIĆ, *On an integral-type operator from logarithmic Bloch-type spaces to mixed-norm spaces on the unit ball*, Appl. Math. Comput. **215** (2010), 3817–3823.
- [24] S. STEVIĆ, *On operator P_ϕ^s from the logarithmic Bloch-type space to the mixed-norm space on unit ball*, Appl. Math. Comput. **215** (2010), 4248–4255.
- [25] R. ZHAO, *Some inequalities for the functions in weighted Bergman spaces*, Acta Math. Sinica (Chin. Ser.) **30A** (5) (2010), 1306–1312.
- [26] R. ZHAO AND K. ZHU, *Theory of Bergman spaces on the unit ball*, Memoires de la SMF **115** (2008), 103 pages.
- [27] K. ZHU, *Spaces of Holomorphic Functions in the Unit Ball*, Graduate Text in Mathematics 226, Springer, New York, 2005.