Operators and Matrices
Volume 11, Number 2 (2017), 587–592
doi:10.7153/oam-11-38

ISOMETRIC COMPOSITION OPERATORS ON THE FOCK–SPACES

ANURADHA GUPTA AND POOJA SHARMA

Abstract. In this paper a necessary and sufficient condition for a holomorphic self map ϕ on $\mathbb{C}^N$ to induce an isometric composition operator on the Fock space has been obtained. Some necessary and sufficient conditions for a composition operator C_ϕ to be a quasi-isometric and m-isometric have also been explored.

Mathematics subject classification (2010): 47B33, 46B04, 30H20.
Keywords and phrases: Composition operators, isometry, Fock spaces.

REFERENCES

[1] J. AGLER AND M. STANKUS, *m-Isometric transformations of Hilbert space, I*, Integral Equations Operator Theory, **21**, (1995), 383–429.
[2] R. F. ALLEN AND F. COLONNA, *Isometries and spectra of multiplication operators on the Bloch space*, Bull. Aust. Math. Soc., **79**, (2009), 147–160.
[3] R. F. ALLEN AND F. COLONNA, *On isometric composition operators on the Bloch space in* $\mathbb{C}^N$, J. Math. Anal. Appl., **355**, (2009), 675–688.
[4] R. F. ALLEN, K. C. HELLER AND M. A. PONS, *Isometric composition operators on the analytic Besov spaces*, J. Math. Anal. Appl., **414**, no. 1 (2014), 414–423.
[5] B. J. CARSWELL, B. D. MACCLUER AND A. SCHUSTER, *Composition operator on the Fock space*, Acta Sci. Math. (Szeged), **69**, (2003), 871–887.
[6] F. COLONNA, *Characterization of the isometric composition operators on the Bloch space*, Bull Aust. Math. Soc., **72**, (2005), 283–290.
[7] S. M. GRUDSKY AND N. L. VASILEVSKI, *Toeplitz operators on the Fock space: Radial component effects*, Integral Equations Opertors Theory, **44**, (2002), 10–37.
[8] R. HORN AND C. JOHNSON, *Matrix Anslysis*, Cambridge University Press, Cambridge, 1990.
[9] S. JANSON, J. PECTRE AND R. ROCHBERG, *Hankel forms and the Fock space*, Rev. Math. Iberoamericane, **3**, (1987), 61–129.
[10] C. J. KOLASKI, *Isometries of weighted Bergman spaces*, Can. J. Math., **34**, (1982), 910–915.
[11] C. J. KOLASKI, *Surjective isometries of weighted Bergman spaces*, Proc. Amer. Math. Soc., **105**, (1989), 652–657.
[12] J. LAITILA, *Isometric composition operators on BMOA*, Math. Nachr., **283**, (2010), 1646–1653.
[13] G. L. LI AND Z. H. ZHOU, *Isometries on product of composition and integral operator on Bloch type spaces*, J. Inequal. Appl., **8**, (2010).
[14] M. J. MARTIN AND D. VUKOTIC, *Isometries of some classical function spaces among the composition operators*, Contem. Math., **393**, (2006), 133–138.
[15] M. J. MARTIN AND D. VUKOTIC, *Isometries of the Dirichlet space among the composition operators*, Proc. Amer. Math. Soc., **134**, no. 6 (2006), 1701–1705.
[16] M. J. MARTIN AND D. VUKOTIC, *Isometries of the Bloch space among the composition operators*, Bull. Lond. Math. Soc., **39**, (2007), 151–155.
[17] W. NOVINGER AND D. OBERLIN, *Linear isometries of some normed spaces of analytic functions*, Can. J. Math., **37**, (1985), 62–76.
[18] S. M. PATEL, *A note on quasi-isometries*, Glasnik Mathematicki, **35** (55), no. 2 (2000), 307–312.
[19] K. STROETHOFF, *Hankel and Toeplitz opertors on the Fock spaces*, Michigan Math. J., **39**, (1992), 3–16.

Paper OaM-11-38

[20] R. WALLSTEN, *The S^p-criterion for Hankel forms on the Fock spaces $0 < p < 1$*, Math. Scan., **64**, (1989), 123–132.
[21] SEI-ICHIRO UEKI, *Hilbert-Schmidt weighted composition operator on the Fock space*, Int. Journal of Math. Anal., **1**, no. 16 (2007), 796–774.
[22] K. ZHU, *Analysis on Fock spaces*, Graduate Texts in Mathematics 263 (Springer, New York, 2012).
[23] N. ZORBOSKA, *Isometric composition operators on the Bloch-type spaces*, C. R. Math. Acad. Sci. Soc. R. Can., **29**, no. 3 (2007), 91–96.