

INTEGRABILITY THEOREMS FOR FOURIER–JACOBI TRANSFORMS

CHOKRI ABDELKEFI AND ABDESSATTAR JEMAI

Abstract. In this paper, we prove the Hardy-Littlewood-Paley inequality for the generalized Fourier transform on Chébli-Trimèche hypergroups and we study in the particular case of the Jacobi hypergroup the integrability of this transform on Besov-type spaces.

Mathematics subject classification (2010): Primary 47G30, Secondary 44A15, 44A35.

Keywords and phrases: Chébli-Trimèche hypergroups; Generalized Fourier transform; Jacobi hypergroup; Jacobi function.

REFERENCES

- [1] C. ABDELKEFI AND M. SIFI, *On the uniform convergence of partial Dunkl integrals in Besov-Dunkl spaces*, Fractional Calculus and Applied Analysis Vol. 9, N. 1 (2006), 43–56.
- [2] C. ABDELKEFI AND M. SIFI, *Characterization of Besov spaces for the Dunkl operator on the real line*, Journal of Inequalities in Pure and Applied Mathematics, Vol. 8 (2007), Issue 3, Article 73, 11 pp.
- [3] C. ABDELKEFI AND M. SIFI, *Further results of integrability for the Dunkl transform*, Communication in Mathematical Analysis Vol. 2, N. 1 (2007), 29–36.
- [4] C. ABDELKEFI, J. PH. ANKER, F. SASSI AND M. SIFI, *Besov-type spaces on \mathbb{R}^d and integrability for the Dunkl transform*, Symmetry, Integrability and Geometry: Methods and Applications, SIGMA 5 (2009), 019, 15 pages.
- [5] O. V. BESOV, *On a family of function spaces in connection with embeddings and extentions*, Trudy Mat. Inst. Steklov 60 (1961), 42–81.
- [6] W. R. BLOOM AND H. HEYER, *Harmonic analysis of probability measures on hypergroups*, Walter de Gruyter Berlin-NewYork, 1995.
- [7] W. O. BRAY AND M. A. PINSKY, *Growth properties of Fourier transform via moduli of continuity*, J. Funct. Anal. 255 (2008) 2265–2285.
- [8] W. O. BRAY AND M. A. PINSKY, *Growth properties of the Fourier transform*, arXiv:0910.1115v1 [math.CA] 6 Oct 2009.
- [9] T. H. KOORNWINDER, *Jacobi functions and analysis on non compact semisimple Lie groups. Special Functions: Group Theoretical Aspects and Applications*, (R. A. Askey, T. H. Koornwinder and W. Schempp, eds.) Reidel, Dordrecht, 1984.
- [10] E. C. TITCHMARSH, *Introduction to the theory of Fourier integrals*, Clarendon Press, Oxford, 1937.
- [11] K. TRIMÈCHE, *Generalized Harmonic Analysis and Wavelets Packets*, Gordon and Breach Science Publishers (1997).
- [12] K. TRIMÈCHE, *Transformation intégrale de Weyl et Théorème de Paley-Wiener associés à un opérateur différentiel singulier sur $(0, +\infty)$* , J. Math. Pure et Appl., 60, pp. 51–98, 1981.