

Year: 2019

Vol.: 94

Fasc.: 3-4

Title: Restricted summability of the multi-dimensional Cesàro means of Walsh–Kaczmarz–Fourier series

Author(s): Károly Nagy and Mohamed Salim

The properties of the maximal operator of the (C, α) -means ($\alpha = (\alpha_1, \dots, \alpha_d)$) of the multi-dimensional Walsh–Kaczmarz–Fourier series are discussed, where the set of indices is inside a cone-like set. We prove that the maximal operator is bounded from dyadic Hardy space H_p^γ to Lebesgue space L_p for $p_0 < p$ ($p_0 = \max\{1/(1 + \alpha_k) : k = 1, \dots, d\}$) and is of weak type $(1, 1)$. As a corollary, we get a theorem of Simon on the a.e. convergence of cone-restricted two-dimensional Fejér means of integrable functions. In the endpoint case $p = p_0$, we show that the maximal operator $\sigma_L^{\kappa, \alpha, *}$ is not bounded from the dyadic Hardy space $H_{p_0}^\gamma$ to the Lebesgue space L_{p_0} .

Address:

Károly Nagy
Institute of Mathematics
and Computer Sciences
University of Nyíregyháza
P. O. Box 166
H-4400 Nyíregyháza
Hungary

Address:

Mohamed Salim
Department of Mathematical Sciences
UAEU
Al Ain
United Arab Emirates