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

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The properties of the maximal operator of the \((C, \alpha)\)-means \((\alpha = (\alpha_1, \ldots, \alpha_d))\) 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 \(H^p_{\alpha_0}\) to Lebesgue space \(L^p\) for \(p_0 < p < p_0 = \max\{1/(1 + \alpha_k) : k = 1, \ldots, d\}\) 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 \(\sigma_{L^p}^{\alpha_0, \alpha_0}\) is not bounded from the dyadic Hardy space \(H^p_{\alpha_0}\) to the Lebesgue space \(L^p_{\alpha_0}\).

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