

1116-47-2781

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We consider a class of integral operators $T_{\mu,\nu}f(z) := z^{\mu-1}(1-z)^{-\nu} \int_0^z w^{-\mu}(1-w)^{\nu-1}f(w)dw$ on the Zygmund space \mathcal{Z} of the unit disk. Specifically, we obtain the boundedness, spectrum and the point spectrum of $T_{\mu,\nu}$ on the Zygmund space \mathcal{Z} . We also obtain boundedness and boundedness from below of the multiplication operator $M_u f(z) = u(z)f(z)$ on the Zygmund space which is a crucial in the proof of spectrum of $T_{\mu,\nu}$.

(Received September 22, 2015)