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Alex Stokolos* (astokolos@georgiasouthern.edu), Georgia Southern University, PO Box 8093, Statesboro, GA 30460-8093. *Some properties of strong maximal operator in 3D.*

It is well known that the maximal operator associated to the basis of all 3D rectangles continuously maps $L \log^2 L$ into $L^{1,\infty}$, while the maximal operators associated to the basis of rectangles of dimensions $(t, 1/t, s)$ acts from the larger class $L \log^+ L$ into $L^{1,\infty}$. For a natural class of bases (included the above mentioned) we give a simple geometric condition which guarantees that $L \log^2 L$ class cannot be enlarged. This result is related to the theorems of A.Córdoba, F.Soria, R.Fefferman and J.Pipher. (Received February 21, 2010)