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*Directional maximal operators with smooth densities*

We investigate the mapping properties of directional maximal operators on the plane with smooth densities. If vectors of all lengths in a given set of directions are taken in defining the maximal operator, then the boundedness of the operator depends on the order of the stationary points of the density function. In contrast, if the set of directions is limited to sums of dyadic directions, and the density function has only finitely many stationary points, each of finite order, the maximal operator is bounded on all  $L^p$  for  $p > 1$ .

This is joint work with M. Roginskaya.