

# Another look at Ornstein's $L^1$ -noninequalities

Bernd Kirchheim, Universität Düsseldorf

March 4, 2009

Abstract: The fact that differential operators which are linearly independent can have comparable norms in the  $L^2$ - (or  $L^p$  for  $p \in (1, \infty)$ ) has many important applications. On the other hand in the sixties D. Ornstein used a very involved construction to show that such a phenomenon can never occur in the  $L^1$ -context. We show how this result naturally fits in general framework of convex integration using a newly established property of one-homogeneous rank-one convex functions. Further applications in the theory of Gradient Young measures are discussed as well.