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Jean Dolbeault, Maria J Esteban and Michael Loss* (loss@math.gatech.edu), School of Mathematics, Georgia Tech, 686 Cherry Street, Atlanta, GA 30332-0160. *Symmetry results for Caffarelli-Kohn-Nirenberg inequalities.*

The Caffarelli-Kohn-Nirenberg inequalities in space dimension $N \geq 2$ can be written as

$$\left(\int_{\mathbb{R}^N} \frac{|w(x)|^p}{|x|^{bp}} dx \right)^{2/p} \leq C_{a,b}^N \int_{\mathbb{R}^N} \frac{|\nabla w(x)|^2}{|x|^{2a}} dx$$

for suitable parameters a, b, p . This talk is concerned with new symmetry results for the extremals of these inequalities in a range of parameters for which no explicit results of symmetry have previously been known. The method proceeds via spectral estimates. (Received January 12, 2012)