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*Affine Sobolev inequalities*

The equivalence of the sharp Sobolev inequality and the Euclidean isoperimetric inequality is an amazing connection between analysis and geometry. The connection can be strengthened. This leads to new sharp Sobolev inequalities that are affine and stronger than classical Sobolev inequalities. The crucial new geometric inequality needed is a recently established  $L^p$  affine isoperimetric inequality that is stronger than the Euclidean isoperimetric inequality. One technical tool involved is the solution of a Monge–Ampere equation—the  $p$ -Minkowski problem of convex bodies.