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**Connor Mooney\*** ([mooneycr@math.uci.edu](mailto:mooneycr@math.uci.edu)), 410C Rowland Hall, UC Irvine, Irvine, CA  
92697-3875. *Minimizers of strictly convex functionals.*

A central problem in the calculus of variations is to determine the regularity of Lipschitz minimizers of  $\int F(\nabla u)$ , where  $F$  is convex. When  $F$  is smooth and uniformly convex, De Giorgi and Nash showed that minimizers are smooth. If the graph of  $F$  contains a line segment, minimizers are no better than Lipschitz. In the intermediate case that  $F$  is strictly convex but its second derivatives tend to zero or infinity on some set (which arises in many applications), it is reasonable to ask whether Lipschitz minimizers are  $C^1$ . We will discuss recent results that answer this question positively in some cases and negatively in general, and highlight a connection between this problem and classical differential geometry. (Received September 10, 2019)