

Grant Galbraith (G.Galbraith@lse.ac.uk), Department of Mathematics, London School of Economics, *Solution Regularity via Nonsmooth Value Functions*

We consider a calculus of variations problem with fixed endpoints and a nonsmooth, extended real-valued Lagrangian. At issue is whether we can guarantee Lipschitz regularity of an optimal solution, or to guarantee the absence of the Lavrentiev phenomenon. We will show how this can be accomplished by allowing one of the fixed endpoints to vary, then consider the behavior of the resulting value function V . We will see how the existence of certain types of subgradients of V will help us to answer our questions of regularity in the original, fixed endpoint problem.