1108-53-498 **Boris Mordukhovich**, 656 W Kirby, Detroit, MI 48201, and **Yuan Tian***, 656 W Kirby, Detroit, MI 48201. *Implicit Euler Approximation and Optimization of One-Sided Lipschitzian Differential Inclusions.*

This paper concerns the study of the generalized Bolza problem governed by differential inclusions satisfying the so-called "relaxed one-sided Lipschitzian" (ROSL) condition with respect to the state variables subject to various types of nonsmooth endpoint constraints. We construct discrete approximations of differential inclusions with ROSL right-hand sides by using the implicit Euler scheme for approximating time derivatives, and then we justify an appropriate well-posedness of such approximations. Our principal result establishes the strong approximation (in the sense of the $W^{1,2}$ norm convergence) of an "intermediate" local optimal solution of the continuous-time Bolza problem under the ROSL assumption by optimal solutions of the implicitly discretized finite-difference systems. Finally, we derive necessary optimality conditions for the discretized Bolza problems via suitable generalized differential constructions of variational analysis. The obtained results on the well-posedness of discrete approximations and necessary optimality conditions allow us to justify a numerical approach to solve the generalized Bolza problem for one-sided Lipschitzian differential inclusions by using discrete approximations constructed via the implicit Euler scheme. (Received January 20, 2015)