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Boris Mordukhovich* (boris@math.wayne.edu). *DISCRETE APPROXIMATIONS AND OPTIMAL CONTROL OF PROX-REGULAR SWEEPING PROCESSES.*

This talk concerns optimal control problems for several versions of the controlled sweeping process governed by dissipative differential inclusions while the main attention is paid to brand new results concerning a nonconvex prox-regular version of the sweeping process and its applications. Such dynamic optimization problems constitute a new and challenging class in optimal control of discontinuous systems with intrinsic state constraints of inequality and equality types. We develop the method of discrete approximations for this class of optimal control problems and establish its strong convergence properties. Using advanced tools of variational analysis and generalized differentiation allows us to derive necessary optimality conditions for discrete-time problems and then pass to the limit with respect to the vanishing discretization step. In this way we derive nondegenerate necessary optimality conditions for the original sweeping control problems expressed in terms of given local minimizers and problem data. Some efficient applications of the obtained results to the planar crowd motion model are also discussed in the talk. (Received February 03, 2018)